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GENERAL MEETING.

The Half-Yearly General Meeting of the Members of the Corporation will be held at the College, Bloomsbury Square, W.C., on Saturday, the 23rd of January, 1909, at 3 p.m.

MEMBERS' DINNER.

The Members' Dinner will take place at the Hotel Cecil, Strand, W.C., on Saturday, the 23rd of January, at 6.30 p.m. Tickets (not including wine), 6s. each. Members who intend to be present are requested to send early notice to the SECRETARY. Members may obtain tickets for their friends.

LECTURES FOR TEACHERS.

The First Course of Lectures (Thirty-seventh Annual Series), by Prof. J. ADAMS, M.A., B.Sc., F.C.P., on **"The Psychological Bases of Teaching and Education,"** will commence on Thursday, February 4th, at 7 p.m.

The purpose of the Course is to give teachers an opportunity to study at first hand the principles that underlie the practice of their profession. The lecturer will treat his subject in such a way as to fit in with the requirements of the College in connexion with the examinations for the Associateship, the Licentiateship, and the Fellowship; but his main purpose will be to present the matter in such a way as to make it of practical service to the teacher. The reading of the students will be guided, and problems set for their exercise. All the illustrations in the lectures will be drawn from actual experience in the schoolroom, and will include the results of current experimental methods. The Fee for the Course is Half-a-Guinea. The Lectures will be delivered on Thursday Evenings at 7 o'clock, at the College, Bloomsbury Square, W.C. *For Syllabus, see page 6.*

EXAMINATIONS.

Diplomas.—The next Examination of Teachers for the Diplomas of the College will commence on the 30th of August, 1909.

Practical Examination for Certificates of Ability to Teach.—The next Practical Examination will be held in February, 1909.

Certificate Examinations.—The Midsummer Examination for Certificates will commence on the 29th of June, 1909.

Lower Forms Examinations.—The Midsummer Examination will commence on the 29th of June, 1909.

Professional Preliminary Examinations.—These Examinations are held in March and September. The Spring Examination in 1909 will commence on the 2nd of March.

Inspection and Examination of Schools.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

The Regulations for the above Examinations can be obtained on application to the Secretary.

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NOTICE.—"THE EDUCATIONAL TIMES" for **February** will contain the CLASS LISTS OF CANDIDATES who have passed at the recent CHRISTMAS EXAMINATIONS of the College of Preceptors.

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A Christmas Card for Mr. Runciman.

Among the rubbish that blocks the editorial table at Christmas time and overflows upon the chairs and floor—Abecedarian Arithmetic, Artist's Almanack, Bible Beauties, Comic Cuts from English Chronicles, Dante for Dullards, and so on through the alphabet down to Zodiacal post-cards—we have lighted on one pearl of great price, a booklet published by Bowes & Bowes, Cambridge, entitled, "Microcosmographia, a Guide for the Young Academic Politician." It is a pungent satire on University politics; but, like all good satires, it has more than a local application, and we need no excuse for directing our readers' attention to this delightful skit, which touches so delicately the sore place in our educational macrocosm.

"Nothing is ever done until every one is convinced that it ought to be done, and has been convinced so long that it is now time to do something else." Is not this true of the great question that has occupied public opinion chronically, and Parliament by fits and starts, ever since the Act of 1870 and before—the nationalization of elementary education? We have patched and botched and see-sawed, alternately advancing and retreating, and successive Chancellors of the Exchequer have "dallied with their golden chains, and smiling put the question by," and now, in 1909, we seem further off a solution than we were in 1908.

And, when we pass to secondary education, the satire of "Microcosmographia" appears even more direct and pointed. The academic person (we read) is to Hamlet as Hamlet is to the instinctive female. He is, "to use his own quaint phrase, a 'beast'; his discourse is many times larger, and he looks before and after many times as far. There is only one argument for doing something; the rest are arguments for doing nothing." Among the latter are the Argument of the Wedge, "that you should not act justly now for fear of raising expectations that you may act still more justly in the future"; the Argument of the Dangerous Precedent; of "Give the present system a fair trial," and of "the Time is not ripe," for an exposition and exposure of which we must refer our readers to the original. But, if any one were inclined to doubt the applicability of the satire to current educational politics, he could not do better than read the report of the last Head Masters' Conference; had he heard the debates the proof would be still more convincing. Mr. Gilson brought forward what, in one form or another, has been a standing dish at every recent Conference, the place of Greek in schools. He asked the Conference to affirm, what is now assumed as axiomatic by every authority on pedagogics, that the average boy cannot with advantage undertake the study of more than two foreign languages before the age of fourteen, and, as a rider, that if Latin be one of them, French and German should be accepted as equivalents for Greek. Dr. James declared himself sick of the Greek question, but was ready once more to apply the *argumentum ad cuneum*. This seemingly innocent proposal would open the floodgates of scientific barbarism. The neglect of Greek was already sapping the foundation of our national life, corrupting our literature, and degrading our morals. He was backed by Mr. Lyttelton with the *argumentum ad cruditatem*. The question was sprung on them; let them confer with the preparatory head masters (as if they had not conferred already); let these together draw up a well considered curriculum (as if the conference had not at that very sitting approved the curriculum of the British Association)—in a word, "the time was not ripe." Those of the Conference who could not stomach the strong meat thrown to them by Dr. James greedily swallowed Mr. Lyttelton's honeyed sop, and appointed a Committee to confer with the Preparatory Masters and report to the next meeting.

Academic parties are not easy to distinguish precisely, but there is no difficulty in classifying according to the "Guide" Mr. Lyttelton. "A Conservative Liberal is a broad-minded man who thinks that something ought to be done, only not anything that any one now desires, but something that was not done in 1881–82." Nor, when we read the definition of the "Young Man in a Hurry," is there any difficulty in fitting the cap. In spite of his years and gravity, Dr. Gray of Bradfield College was "inexperienced enough to imagine that something might be done before very long, and even to suggest definite things." He had the audacity to propose to the Conference that, in order to secure a more complete co-ordination of the educational system, non-local schools should submit themselves to inspection by the Board of

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Education and even welcome Inspectors as allies and friends. It is needless to say that so rank a proposition was rejected, and the wonder is that the previous question was carried by so small a majority. All agreed that inspection in the abstract was at worst a necessary evil and that, if conducted by the Universities—that is, by friendly amateurs—it might be pleasant and even comfortable; but a compulsory inspection conducted by professionals was a very different matter. That head masters should be compelled to fill up forms and compile statistics was not only vexatious but derogatory to their dignity, and, as one gentleman remarked, subversive of character. The tricolour of the Conference—"Liberty, Variety, Elasticity"—must be nailed to the mast. A head master's school was his castle into which no Board would be admitted. But the argument that carried the day was "Inopportuneness." A member of the Conference was at the moment threatened by the Board with legal action, and for the Conference to express any opinion *pendente lite* would be obviously unfair and prejudice the case.

E pur si muove! 1908 will be remembered as the Annus Mirabilis in which the Head Masters' Conference—Conservative Liberals, Liberal Conservatives, Non-placets, Adullamites, and Young Men in a Hurry—passed a unanimous resolution which, as the *Morning Post* interpreted it, is tantamount to a direct vote of censure on the Board of Education. It was moved by Dr. Gow, seconded by Canon Swallow, and carried unanimously:—

(*a*) That this Conference is of opinion that, in the formation of a Registration Council under the Education (Administrative Provisions) Act of 1907, representatives of the teaching profession should be chosen with reference to the types and grades of existing schools, and not with reference to the several faculties of teachers; and (*b*) that this Conference trusts that the Board of Education will take steps to facilitate the constitution of such a Council without further delay.

The motion, as proposed by Dr. Gow, was couched in stronger terms, calling upon the Board to proceed to the constitution of the Council; but the amendment, accepted in deference to Dr. Fry's plea for meekness and patience, comes, as Dr. Gow remarked, to the same thing.

The principle of the draft scheme for a Registration Council, which was so unceremoniously rejected by the Board of Education, will be familiar to all our readers, even if they have forgotten the details. It is enough for our purpose to remind them that it was approved by all the delegates of the various educational associations at the meeting held last February at the College of Preceptors, and afterwards confirmed by the several associations, including the College of Preceptors. Further, these delegates were acting at the instance of the President of the Board, who had given them to understand that, if they could come to an agreement among themselves, the Board of Education would accept their conclusions and forthwith take steps to issue an Order in Council in pursuance of the Act. That agreement is now repudiated by Sir Robert Morant, but Dr. Gow stated to the Conference that he had it on the highest authority that "the account given in the White Paper of the preliminary negotiations that resulted in Clause 16 is a mere travesty of what took place."

The scheme of the delegates was by no means perfect; there were overlappings and serious omissions. So much Dr. Gow frankly admitted. It was open to amendments in details, and it was intended that the Board of Education should so modify it. But it was not intended that the Board should invite objections from every educational society to be found in Whitaker, and some too obscure to be found there, and then, as Dr. Gow complained, fling all the protests at his head. Dr. Gow is a good Christian, but he refuses, at Sir Robert Morant's invitation, to enter the lions' den with six drawing masters, four musicians, two stenographers, a bookkeeper, and other denizens of the fringe, all flying at his throat and demanding the reason why they were not admitted to the Council.

Mr. Runciman is in Egypt, enjoying a well earned holiday after his long and strenuous efforts to settle a weightier and far more thorny question than the Registration of Teachers. He has been hailed by all parties as a true peacemaker, and won universal admiration in spite of his ill success. In the land of the lotus the resolution of the Head Masters' Conference, if it reaches him at all, will appear "a tale of little meaning, though the words are strong." But, when he returns to his duties at Whitehall, we hope that the first business he takes in hand will be to master for himself the question of registration, to abandon, if not to repudiate, the *non possumus* attitude of his Permanent Secretary, and proceed without further delay to put into operation Clause 16. Let him remember that that clause is backed not only by the Head Masters' Conference and the Incorporated Association of Head Masters, but by a far more numerous and more influential body, the National Union of Teachers.

NOTES.

THE Education Bill is dead and gone. We confess we had considerable hopes of a settlement when a compromise was seriously attempted after the questions at issue had been thrashed out thoroughly and reduced to specific and manageable points. We do not think that the failure can be laid at the door of the prominent negotiators. We have no doubt whatever that both sides were most anxious to arrive at an accommodation. But the facts appear to have been inadequately realized, and the lack of time to ascertain them with sufficient clearness to establish an agreement gave a welcome opportunity to extremists in both camps. The sore thus remains open and aggravated. Compromise is essentially unsatisfactory to both parties; but, failing compromise, there is nothing to look for but a further period of bitter struggle. Yet, if the teaching of religion in the schools had been left to the parents and the teachers, there can be little doubt that it would have gone on satisfactorily and smoothly. Dogma seems strangely out of place in conflict with religion.

THE Presidential address of Mr. A. C. Benson to the Teachers' Guild, published in full in the December number of the *Teachers' Guild Quarterly*, is well worth reading, alike for its wisdom and for the excellent literary form in which that wisdom is embodied. The subject is "The Personality of the Teacher." Mr. Benson begins by dwelling on the

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importance of preserving a due proportion between the scientific and the emotional elements in the teacher. The early appetite for knowledge is often, he reminds us, fitful, and can be cultivated only by a certain sympathetic influence. It is destroyed by a bore, and cannot be stimulated by even an enthusiast without a certain attractive and persuasive power. The question for each teacher to consider is how to make the best of himself, remembering that if a lesson goes badly the fault lies with himself rather than with his class. First comes the maintenance of physical health: the teacher should conscientiously observe the laws of health in matters of food, exercise, and the like, and should especially "obey the dictates of honest fatigue." Next the intellectual side: he should never become stereotyped, but read widely, not so much on the lines of his prescribed studies as in books which he enjoys and which cultivate the intellectual sense and widen the horizon. He must cultivate his imaginative faculty, and, above all, he must be alive, with all his deep-seated seriousness, to the infectious influence of gaiety. Method he must have, and must adhere to it, and at the same time be ready to change it if it fails to appeal to his pupils. Lastly, the moral or ethical region of self-development is briefly discussed. The ramifications of the subject are infinite; probably the safest rule is that the teacher should aim sincerely at making himself what he desires his pupils to be.

The Board of Education has just issued a Circular (No. 599) on the Teaching of History in Secondary Schools, and along with it a Memorandum "in explanation and expansion" of it. The Circular recommends a course extending over at least three years, and, if possible, four; for the course is to include English history from the earliest times, with such reference to and explanation of the chief events of European history as is necessary for the understanding of English history, and with special attention to local history. The history results are usually not very satisfactory; nor is this to be wondered at when one considers the quantity as well as the nature of the matters to be grasped and the immaturity of the apparatus that is expected to grasp them. The Circular, however, "also recommends that a large liberty should be assumed in each school to leave out freely much which is now included in the ordinary school treatment." Here, at last, is sound sense; and inspectors must attend to it as well as teachers. The obvious course is to concentrate on the essential points. The Circular rules out "special periods," except "very late in the school course: they are really more suited for University work"; while acknowledging certain advantages in the "concentric system," it finds "fatal objections in practice"; and it argues against the plan of working back from the present into the past. The scheme is, on the whole, a very good working arrangement, provided it is carried out in the large and free spirit that appears to animate it. "The practical difficulty that we have to meet is examinations." That, again, depends upon getting sensible examiners. The scheme has evidently been well thought out, and abundant illustrations are given by way of example and argument. But when teacher and pupil have done their honest best, we shall not expect more than moderately satisfactory results; for the subject is intrinsically difficult, requiring exceptional capacity both in teacher and in pupil. Still, we may improve on previous results.

The Army Qualifying Board had some 326 candidates before them in September, and passed only 113 of them—say one in three. On the face of it, there is nothing very remarkable in the proportion of passes and failures; but there is significance in the details of the report. The English essays might have been expected to be, as they are described, "mediocre"; and some allowance may be made even for "the most grotesque mistakes both in orthography and in punctuation," but marks ought not to have been lost "by pure carelessness and inattention." Précis-writing is a testing exercise. "In most cases it was unequivocally bad": not only had the candidates "little idea of the purposes served by précis-writing," not only was their writing "slovenly" &c., but there was "recklessness in misstatement and an apparent inability of the writers to read a simple narration with any degree of care and intelligence." "Much of the arithmetic work was very unsatisfactory"; "the results of the examination in geometry were very poor indeed." The chemistry was "distinctly poor." An unduly large proportion of the candidates "knew practically nothing of geography." "A lamentable ignorance of sound elementary knowledge of French was shown"; and "of the ten candidates offering German not one was really good, and some were very bad." How of Latin and Greek? "Only a small proportion of the candidates in Latin are safe from making blunders of the most elementary description." Only a single candidate offered Greek, and his achievement was to "send up half-a-dozen words of no value." After this disastrous catalogue, it is some relief to learn that "Algebra was good, and history was better than it has sometimes been." But one would like to know something of the educational history of these astonishing candidates. Surely it is only an elaborate and ingenious course of training that could have led to such egregious results. If young men of such calibre be set to command even a corporal's guard in these days of scientific warfare, we may well pray earnestly for peace in our (and their) time.

Among the many celebrations of Milton, the first place is due to the memorial reverence done him at Cambridge, which is duly chronicled in the "Milton Tercentenary Number" of *Christ's College Magazine*. Fortunately a "commodious lie" of a virulent disputant furnished the poet with "an apt occasion to acknowledge publicly with all grateful mind that more than ordinary favour and respect which I found above any of my equals at the hands of those courteous and learned men the Fellows of that College wherein I spent some years, who at my parting, after I had taken two degrees, as the manner is, signified many ways how much better it would content them that I would stay, as by many letters full of kindness and loving respect, both before that time and long after, I was assured of their singular good affection towards me." "Not only Christ's, but Cambridge itself, and the studies for which Cambridge was even then becoming famous," said Prof. Mackail, "gave a specific direction to his genius and left an indelible

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impress on his poetry." It was right, therefore, that Christ's and Cambridge should do special reverence to the memory of Milton, and hail him as the greatest ornament of the College and the foremost "on the dazzling roll of poets whom Cambridge claims as her sons."

SUMMARY OF THE MONTH.

THE London County Council have agreed, with reference to teachers' pensions, "that the principle of such a complementary scheme of superannuation as will provide that the retiring allowance receivable by a certificated teacher in a London public elementary school, together with the benefits receivable by him or her under the Elementary School Teachers (Superannuation) Act, 1898, shall, so far as possible in all the circumstances, be the same as those to which officers of the Council of equal service and similar average salary are entitled."

THE Herts County Council are spending some £8,000 on the erection of a new elementary school for Letchworth (Garden City), with features diverging from the ordinary type of elementary school. All the classrooms surround an open quadrangle, on two sides of which there is a series of cloisters for shelter. Thus, every classroom will be in direct communication with the open air to a degree which is impossible in the ordinary school where the classrooms cluster round a central hall. Moreover, each classroom has been limited to 400 square feet of floor area, which gives forty as the maximum number of children. It is hoped, however, that not more than thirty-two children will be taught in each classroom; and this reduction in the number of children to each teacher will be no inconsiderable gain educationally.

THE Westminster School play this year opened with words of welcome to Princess Henry of Battenberg, who was present, and a merry quip on women's suffrage. The play selected was the "Andria" of Terence, a standard classic at Westminster. The familiar story was well told in excellently spoken Latin. The principal parts were worthily filled. Simo the determined father, Pamphilus the wayward son, and Davus his faithful servant acted and spoke well; and Messrs. I. L. Benvenisti, G. G. Williams, and R. M. Barrington-Ward (the captain of the school) are to be congratulated on their histrionic powers. The play was, as usual, followed by an amusing epilogue, also in Latin, comprising the same cast, and consisting of a series of skits on present topics, including, of course, the Suffragette question, the Franco-British Exhibition, and the Marathon race.

THE Head Masters' Conference was held (December 22 and 23) at Merchant Taylors' School, under the presidency of Dr. Arbuthnot Nairn. Over a hundred head masters attended. The Rev. Dr. Gow (Westminster) moved: "That, in the formation of a Registration Council under the Education (Administrative Provisions) Act of 1907, representatives of the teaching profession should be chosen with reference to the types and grades of existing schools, and not with reference to the several faculties of teachers, and that this conference trusts the Board of Education will take steps to facilitate the constitution of such a Council without delay." Canon R. D. Swallow (Chigwell) seconded, and the motion was carried. Dr. Gray (Bradfield) moved: "That this Conference, while anxious for the preservation of a variety of types in the secondary schools of this country, recognizes the value of securing a more complete co-ordination of the educational system, and with this end in view would welcome a closer touch between the Board of Education and the authorities of the non-local schools, through inspection and other direct means of communication." He hoped that the non-local schools and the Board of Education would join hands in proposing a scheme which would be pressed upon the Universities. So long as Oxford and Cambridge insisted on the retention of two dead languages as a *sine qua non* for entrance into their courts, so long would educational progress be cramped, encased, and crushed. The Rev. A. A. David (Clifton) seconded, and Dr. A. E. Hillard (St. Paul's School), opposing, said that the Inspectors of the Board of Education were not suitable for the work of inspection of public schools. Eventually the "previous question" was carried.

ON the second day of the Conference, Dr. Upcott (Christ's Hospital) moved a resolution to the effect that the Conference, while withholding its assent to many details, and in particular to the proposal to postpone the study of Latin to the age of twelve, approved of the main conclusions of the Report of the Committee of the British Association, Education Section. This was carried. A motion that the Army Council be urged at once to make it a rule that recognized schools may send in candidates for any examination recognized by the Council was referred to the Committee. Mr. R. C. Gilson (Birmingham) submitted a resolution in three parts. The first laid it down that, in the opinion of the Conference, the average boy could not undertake the study of two languages besides English before attaining the age of fourteen without detriment to his general education. The second part declared it desirable that no candidate of the ordinary age for admission should be allowed to offer more than two foreign languages in the Entrance and Entrance Scholarships Examinations of the public schools, and that, provided Latin was taken, Greek, French, and German should be alternatives carrying equal weight. The third part stated that, as experience showed it to be possible for a boy to attain a high standard of Greek scholarship by the age of eighteen or nineteen, even though he might not have begun Greek till fourteen or even later, it was the duty of public schools to provide a class or classes in which the study of that language could be begun. The Head Master of Eton moved as a rider that a Committee be appointed to confer with the preparatory-school masters as to a scheme of studies for schoolboys from the age of nine to about sixteen, and to draw up a report. It was time head masters showed the country that they had made up their minds as to what the curriculum in the schools should be. An amendment by Mr. W. G. Rushbrooke (St. Olave's) to substitute thirteen years as the age instead of fourteen in the first clause of the resolution was adopted. The second clause was defeated and the third carried. The rider was also agreed to. On the motion of the Rev. W. C. Compton (Dover), seconded by the Rev. T. N. H. Smith-Pearse (Epsom), the Conference adopted a resolution stating that the standard of the School Certificate Examination conducted by the Oxford and Cambridge Joint Board was too high for the purpose for which it was intended, and instructing the Committee to approach the Board on the subject. Mr. W. W. Vaughan (Giggleswick) asked the Conference to view with regret the apparently increasing neglect of the study of German in secondary schools. A resolution to that effect was carried, only five dissenting.

THE Chelsea Secondary School for Girls was formally opened on November 20. The school was originally part of the South-Western Polytechnic, and the transfer was effected in September last. The new buildings are situated in Hortensia Road, and represent the first school building expressly designed and erected by the London County Council for the secondary education of girls. The aim of the new school is to provide a liberal education for girls up to the age of eighteen or nineteen years. The claims of science to a prominent place in the school curriculum have been duly recognized, and ample accommodation has been provided for the practical study of chemistry, physics, and botany. The home arts are to be taught, and suitable rooms have been arranged for this purpose, as well as for practical work in geography.

A CONFERENCE of teachers and others interested in education was held at the University of Birmingham (December 5), a number of urban and rural districts throughout the Midlands being represented. Mr. J. W. Willis Bund, Chairman of the Worcestershire Education Committee, presided at the morning session. A discussion took place on "Evening Schools," Mr. W. A. Brockington, Director of Education for the County of Leicester, reading a paper on "Compulsory Evening Schools," and Mr. J. Penrice, Meriden, dealing specially with rural evening schools. Mr. Willis Bund emphasized the difficulty entailed by having two education rates and so many controlling authorities. He would like to see the county the authority for education all over the educational area. He was also in favour of the raising of the school age at elementary schools from fourteen to sixteen, and, if possible, "beneficial employment" abolished. Prof. Muirhead contended that the most practical line of advance was not so much the raising of the leaving age as the development of the continuation schools. At the afternoon session, over which Prof. Hughes presided, a paper was read by Mr. W. J. Morgan, President of the Birmingham Trades Council, on "Maintenance

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Scholarships from Elementary Schools." He urged that the children of the working man had to be sacrificed to the necessity of keeping a home together, the financial difficulty of giving promising scholars the advantages of higher education being often insurmountable at present.

THE report on the Bradford Technical College for the session 1907–8 shows that the total number of students in attendance during the session was virtually the same as in the previous year, but there was a fall in the number of day students from 242 to 217. The average age of these students at the commencement of the session was nineteen years, as compared with eighteen years five months at the corresponding period of 1906. A new scholarship scheme, adopted during the session, provides opportunity for the transference of evening students of exceptional ability to the day courses, and offers special scholarships for apprentices in works. In order to carry the specialized training to as high a point as practicable, a number of fourth-year scholarships are offered to day students who have completed their three years' course, and, as a recognition of the necessity for securing the best brains and the highest possible preliminary training, a certain number of entrance scholarships are awarded on merit alone. The scheme affords evidence of the desire that all sections of the community should have equal facilities, as they have an equal claim to the advantages of the college training. The scheme for building a new block for the accommodation of the department of textile industries on an adjoining site, already purchased, has taken definite shape; detailed plans are being prepared and building is to be begun shortly. The staff of the department of chemistry and dyeing has been strengthened with a view to the encouragement of research work in the college. The testing laboratory of the department of textile industries has been employed to a much greater extent than previously in carrying out investigations for the trade. It is pleasing to note that the advantages offered to manufacturers and others are being more fully realized.

A MEETING of the Scottish Modern Languages Association was held in the University of Edinburgh (November 28), Miss Robson, Edinburgh, presiding. Miss Elizabeth Fish, Glasgow, was appointed President for the ensuing year, and Dr. T. Pettigrew Young, of the University College, Dundee, Vice-President. Dr. Schlapp, Edinburgh, submitted a report on a memorandum prepared by the Association dealing with the different aspects in the teaching of modern languages. He said everybody was aware of the alarming condition of the subject of German in the schools of this country. The Committee suggested a change in the conditions of the present intermediate certificates, and he understood the Education Department were inclined to give greater facilities for modern languages. On the motion of Dr. Schlapp, it was agreed to petition the Universities to reform as soon as possible the bursary examination, so as to give equal chances to candidates in modern languages with candidates in all other subjects; and to reorganize the honours class in modern honours language so as to allow of honours being taken separately in French and German. Mr. J. D. Rose, Kirkcaldy High School, moved a resolution to the effect that, while welcoming the prospect that the leaving certificate might become the normal mode of entrance to the University, it was highly important that the University preliminary examination should be maintained, in addition to the leaving certificate examination, so that those prevented in any way from obtaining the leaving certificate might not be shut out from higher careers for which they might have qualified themselves in other ways. The motion was unanimously agreed to. Dr. Pettigrew Young afterwards read a paper on "The Teaching of French in Scotland before the Nineteenth Century."

UNIVERSITIES AND COLLEGES.

Oxford.

THERE are 304 students on the books of the Association for the Education of Women, and 290 of these are in residence. The corresponding figures of last year are 271 and 259, and this year's numbers are a record. The quality is equally well maintained; 51 students obtained honours, 7 in the first and 24 in the second class; and in the examination for the Diploma in Anthropology, held in 1908 for the first time, the only candidate who obtained distinction was a woman student.

Early next term the University will be asked to make a very important change in its own constitution by meeting a reform of Congregation. That body consists at present of all resident members of Convocation and of certain University officials. A resolution will be submitted to Congregation on January 26 in the following terms: "That it is desirable that Congregation should be limited to members of Convocation who hold, or have held, University or College appointments, or are directly concerned with the studies, teaching, or administration of the University." The resolution has the support of over 120 members of Congregation, but it is already evoking a considerable amount of opposition.

(From our own Correspondent.)

Cambridge.

HISTORY has not been made this term, but this is no cause for grumbling. Good solid work has been done in all departments, and our best men have not been called away from the things they know to take part in controversies which are as unsettling as they are unprofitable. The long deferred report on the General Examination will probably make its appearance next term. Here is an examination confessedly producing good results, free from most of the evils innate in examinations as a class, conducted by men of experience and tact, who know the difficulties and dangers of examination divorced from teaching; and yet this is the object of the reformers' attack. Some years ago, as a result of a consensus of the leading lights in Cambridge, essay writing was introduced as a subject into all our examinations, including the General, but not a thing have the College authorities done towards providing adequate teaching. What is the result? The examiners in most examinations have to adapt themselves to the capabilities of the candidates.

The appointment of the Rev. J. P. Whitney to the Chair of Ecclesiastical History at King's College is a well deserved honour paid to a distinguished teacher. Mr. Whitney is, above all things, a man of wide and liberal ideas. In history, law, and theology alike he has made his mark, and he possesses that peculiar faculty, possessed in such perfection by the late Sir Henry Maine, of being able to focus upon the point argued the light derived from sources far apart. Fortunately for Cambridge, Mr. Whitney means to live among us. A Cambridge professorship and an English bishopric will probably follow in due course.

Just after these notes were written for your last issue, Cambridge received a visit from a party of German officials connected with the profession of the law. The excursion was avowedly educational, but in Cambridge it is possible that our visitors gave more than they received in the way of education. Through the hospitality of Dr. Breul a few representative Cambridge men were privileged to meet the foreign visitors, and the most charming speeches were made, notably one by Dr. Ward, Master of Peterhouse, the purity of whose diction made the German guests believe him to be one of their own nation.

The football match, on December 12, turned out much in accordance with the predictions made in these notes last month. Cambridge had the best of the game for more than three-quarters of the time, and were unlucky not to win outright one of the most remarkable games of the past few years. There was a curious unanimity on the part of the London press six weeks before the match that Oxford couldn't lose, and, a week before, that they ought not to do so. But they nearly did.

We ought to have a good crew for Putney this year. The trials have disclosed an abundance of new talent. Shortly after these notes see the light the President will be starting practice with a crew which will probably contain the following or most of them:—Arbuthnot (stroke), Hornidge, Rosher, Perry, Thomson, Fairbairn, Williams, and Richardson. Thiart will come in at seven or bow, according to the needs of the crew.

One of the usual disorderly "rags" after a big dinner has led to an undergraduate's being summoned for doing wilful damage to the amount of more than £5, and this between the hours of 9 p.m. and 6 a.m. There were two other charges of doing damage of a less amount which the magistrates dealt with severely; but, as they could not deal summarily with the third charge, they committed the defendant for trial at the Sessions on this, although practically all were one continuous transaction. This will be a lesson to undergraduates, for Recorders and Judges of the High Court are not always so lenient as a Borough Bench. What we really want is a stipendiary for Cambridge. Local shopkeepers are, no doubt, excellent men in their way; but there seems to be no reason why other qualified men should be excluded from the Bench because they take no part in local, as opposed to Imperial, politics.

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The death of Mrs. J. W. Clark will cause an immense amount of sympathy for the bereaved family, more especially for its venerable head. "J," as he is invariably called by all "the boys," to whom he is such a trusty friend, will have some little consolation in knowing how many there are who feel for him in his trouble.

The poll examination lists are now coming out. There seems a tendency to strictness on the part of the examiners, but, as long as this is accompanied by good examining, nobody objects. The Engineering Special is growing and will grow; the M.B. seems to have reached its stage of maximum development for a time. In a year or two it will possibly make fresh developments.

The thirty-fifth annual report of the Local Lectures Syndicate contains a recommendation from Mr. Cranage, the secretary, that the summer meeting, which is held biennially at Cambridge, should be removed to the north of England, where many of the strongest Cambridge centres are located. It is regarded as a disquieting feature that the summer meeting at the University is supported chiefly by students connected with other University Local Lectures—Oxford and London particularly—and does not attract the Cambridge Local Lectures students in the proportion held to be desirable. Mr. Cranage says it is extremely difficult for many of the students engaged in the ordinary occupations of life to spare the time and the money to come to Cambridge, and he suggests that the summer meeting should become peripatetic.

London. Negotiations have been in progress for some time between the authorities of the University of London and the University of Paris with regard to a proposed interchange of students, or, in other words, the institution of a system whereby students of the one University should be allowed to spend a certain time at the other, such period being officially recognized as part of the course for a degree. The constitution of the University of London did not, however, permit of its accepting any part of a course of study not pursued in one of the ways mentioned in the definition of an "internal student," and, in order to carry out the arrangement, the statutes of the University have had to be altered. The Senate, having previously submitted a draft of the new statute to Convocation, have now adopted it, with this proviso: "A course of study, extending over not more than one year, taken in another University approved for this purpose, subsequent to the passing of the Intermediate Examination, may be accepted in lieu of an approved course of study taken in this University." This new statute has been laid, as is required, on the tables of both Houses of Parliament. Under this new power the University of London will be able to approve the University of Paris, and send its students to study there for one year out of the three required for the bachelor's degree, provided that it is not the first of those three years. There is no constitutional difficulty on the part of the University of Paris, such as there was here, and it is within the power of that University to reciprocate. During the negotiations it was considered whether professors, as well as students, might be interchanged, but the practical difficulties were insurmountable.

The Senate unanimously adopted the following resolution (December 2):—

That, having regard to the desirability of securing incorporation of the Imperial College of Science and Technology with the University, as recommended by the Departmental Committee and contemplated by the Charter of the Imperial College, the Government be requested to appoint a Royal Commission for the purpose with a view to the introduction of a public Bill, and that the Senate reaffirms its willingness to increase its numbers, and will take steps to secure such powers of delegation to its Councils and to any Committees it may appoint as shall appear expedient.

The Report of the Council of King's College alluded to the steady advance of the College in every Department and the improvement in the numbers of the regular students. In particular, the Faculty of Theology showed a large increase, and the system of training had been made more satisfactory. During the past session the King's College Incorporation Act had been passed, receiving the Royal Assent on August 1. The Commissioners appointed under the Act, with Sir James Stirling as chairman, had begun to sit, and the statutes were being drafted. The earliest day on which Incorporation could take place was September 1, 1909. The policy of incorporation and reorganization which would thus be carried out would help in the building up of a teaching University for London out of existing institutions, and would strengthen the portions of the College not incorporated, and especially the School of Theology.

During the session 1907–8 twenty-nine students submitted essays for the University Extension Sessional Certificate in Honours. Of these fifteen were approved for the Honours Certificate, and eight were "commended."

Bristol. A petition has been presented to His Majesty the King by Bristol University College, asking for the establishment of a University in that city. It has been referred to the Privy Council for consideration. It states that there has been a strong and growing feeling for some time in Bristol and the surrounding districts that it would be of great advantage to the inhabitants if such a University were established. With a view to providing the financial support which would be required for developing and adding to the teaching equipment of the College in such a way as to meet the requirements of an independent University, donations amounting to £172,000 have already been received or promised, including £100,000 promised by Mr. Henry Overton Wills, of Kelston Knoll, Weston. The present endowment of the College is £57,316; the income last year was £13,860, and there are at present nearly five hundred registered students, whilst it is stated that there is every reason to believe that, if a University were established, the additional interest created, the facilities afforded, and the prestige conferred thereby would lead to a substantial increase in these numbers.

The draft charter of incorporation of the University of Bristol has been issued. The following are to be the first chief officers of the new University:—Chancellor, Mr. H. O. Wills: pro-Chancellors, the Bishop of Hereford, the Right Hon. Lewis Fry, and the Right Hon. Henry Hobhouse; Vice-Chancellor, Prof. C. Lloyd Morgan, F.R.S.; and Treasurer, Mr. G. A. Wills. Women are to be eligible for any office in the University and for membership of any of its constituent bodies, and all degrees and courses of study in the University are to be open to them. It has been announced that the authorities of the Bristol University College have purchased the blind asylum and its land which adjoin University College. The site thus secured will be used for the erection of part of the new University.

THE EDUCATIONAL LADDER.

Cambridge University.—Carus Greek Testament Prizes:—Bachelors: F. S. Marsh, B.A., Selwyn. Undergraduates: R. H. Willey, B.A., Caius. George Williams Prize for Theology: C. E. Raven, B.A., Caius. Whewell Scholarships: (1) A. E. Brown, B.A., St. John's; (2) N. G. Scorgie, B.A., LL.B., Sidney Sussex.

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Clare.—Dr. T. R. Elliott, late Scholar of Trinity, has been elected to a Fellowship (Natural Science). Scholarships:—Classics: £80, J. J. Wiles, Perse School; £50 (also an Archdeacon Johnson's Exhibition), I. H. Taunton, Uppingham; £40, P. R. Frost, Charterhouse, and H. L. Garson, Malvern. Mathematics: £60, M. Segal, St. Paul's; £50, D. J. Watson, High Wycombe Grammar School; £40, A. J. Wright, Dulwich. Science: £60, A. L. Bacarach, St. Paul's, and R. W. P. Jackson, Oundle; £10 (Science and Mathematics), H. H. Stevens, Liverpool College.

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OXFORD UNIVERSITY.—Craven Fellowship: M. S. Thompson, B.A., Corpus. Craven Studentship at the British School at Athens: A. M. Woodward, B.A., Magdalen. John Locke Scholarship: John C. Flügel, B.A., Balliol. Ireland Scholar and First Craven Scholar: Ronald A. Knox, Scholar of Balliol. Second Craven Scholar: Eric A. Barber, Scholar of New College. Third Craven Scholar: Leslie W. Hunter, Scholar of New College. Proxime Accesserunt: Edgar Lobel, Scholar of Balliol, and Arnold Joseph Toynbee, Scholar of Balliol. Distinguished in the Examination: Frederic C. Geary, Scholar of Corpus Christi; Druce R. Brandt, Exhibitioner of Balliol; John D. Denniston, Scholar of New College; and Reginald M. Y. Gleadowe, Scholar of New College. Seatonian Prize: H. A. Field, Corpus. Derby Scholarship: F. A. B. Newman, sometime Scholar of University College.

All Souls.—Elected to Fellowships: Alan E. G. Hulton, Scholar of New College (History); John G. Archibald, Rhodes Scholar, New College (Law).

Balliol.—Scholarships in Classics: J. Cell, Marlborough; R. M. Barrington-Ward, Westminster; Hon. G. W. Grenfell, Eton, Exhibitioner of Balliol: R. Stanton, Dulwich. Major Exhibitions in Classics: F. Whittle, St. Paul's; A. De C. Williams, Marlborough. Williams Exhibitioner of Balliol; M. R. Ridley, Clifton. Williams Exhibition in Classics: E. F. W. Besley, Winchester. Brackenbury Scholarships in History: E. Ker, Rugby, and R. C. F. Dodgson, Rugby

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Brasenose.—Open Scholarships: Arthur F. Willmer, Birkenhead School; and William G. N. Bower, Cheltenham. Junior Hulme Scholarships: Neville R. Murphy, Christ's Hospital; and John A. Reid, Fettes. Somerset Scholarship (open *pro hac vice*): J. E. Reid, Cheltenham.

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Exeter.—Open Classical Scholarships: Robert W. R. Gramshaw, Charterhouse; Hubert Graham, Manchester Grammar School; and Arthur S. R. Dodd, Christ's Hospital. Open Mathematical Scholarship: Sidney C. L. Miller, Magdalen College School and private tuition. Stapeldon Scholarship for Classics (open *pro hac vice*): Hugh Fraser, Wellington. Open Classical Exhibition: William D. Barron, Aberdeen University. Hasker Exhibition for Divinity: David S. Horne, Reading. Stapeldon Exhibition for Classics: Winthrop Pyemont, Blundell's.

Lincoln.—Scholarship in Modern History: Ronald F. W. Fletcher, King Alfred's School, Wantage. Exhibition in Modern History: Philip H. Bellot, Bedales School, Petersfield. Natural Science Scholarship of £80: John G. Gilbert, Tottenham County School. Natural Science Scholarship of £60: Harold W. Pierce, University College, Bangor. Scholarships in Classics: J. Arman, University College, Cardiff, £80; R. B. Beckett, Woodbridge School, £60. Exhibitions in Classics (£30); H. W. Howe, Eltham College, and J. B. Morton, Rugby.

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Oriel.—Open Scholarships: Hugh Lea Guillebaud, Marlborough; Frederick Grant, Fettes; and David M. Low, Westminster. Adam de Brome Scholarship: John M. Thomson, Glenalmond and Edinburgh University. Bible Clerkship: Thomas Brown Stowell, Merchant Taylors', Crosby.

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University.—Scholarships: B. T. M. Hebert, Harrow; C. S. Nason, Christ's Hospital; W. H. Croome, Wellington. Exhibitions: J. H. Wise, Christ's Hospital.

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CURRENT EVENTS.

Fixtures.

The Half-yearly General Meeting of the members of the College of Preceptors will take place on Saturday, January 23.

* * *

Mr. W. Williams, F.L.S., will address the School Nature-Study Union on "School Gardens, their Nature and Management," at the College of Preceptors on January 29, at 7.45 p.m. All interested in the work of the Union are cordially invited.

* * *

The Annual Meetings of the Assistant Masters' Association will be held on January 6–8 at St. Paul's School, West Kensington, W.

* * *

The third Annual Meeting of the Historical Association will be held at University College, London, on January 8 (6 p.m.) and 9 (10.30 a.m.). Particulars from Miss M. B. Curran, 6 South Square, Gray's Inn, W.C.

* * *

The Annual General Meeting of the English Association will be held at University College, London, on January 15 and 16. Particulars from the Secretary, 8 Mornington Avenue Mansions, W.

* * *

The Modern Language Association will hold its annual meeting at Oxford on January 11–13.

* * *

The Long Vacation Course in Practical Physics at Cambridge for assistant masters in secondary schools will be held again in August next. Apply to the Secretary of the Association, 31 Great James Street, W.C.

* * *

Dr. F. H. Hayward will deliver a course of three lectures on "Problems of Education and Heredity," at South Place Institute, on January 19 and 26, and February 2, at 8 p.m. Tickets at the Institute or from Miss M. Pitts, 9 Clarence Road, Wood Green, N.

Honours.

The University of Dublin has conferred the honorary degree of D.D. upon the Dean of Westminster; the honorary degree of LL.D. upon Sir Robert Hart; and the honorary degree of Litt.D. upon Mr. Justice Madden (Vice-Chancellor).

* * *

The University of Berne has conferred the honorary degree of Ph.D. upon the Rev. W. A. B. Coolidge, M.A., Fellow of Magdalen College, Oxford, in recognition of the value of his many works on Swiss history and geography.

* * *

Dr. James John Hornby, D.D., Provost of Eton, formerly Fellow and Tutor of Brasenose College, Oxford, has been elected an honorary Fellow of the College.

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THE REV. THOMAS R. R. STEBBING, M.A., F.R.S., F.L.S., Gold Medallist of the Linnæan Society, formerly Fellow and Tutor of Worcester College, Oxford, has been elected an honorary Fellow of the College.

Scholarships and Prizes.

CERTAIN Goldsmiths' exhibitions will soon be vacant. Examination, April 28, 29. Particulars from Sir Walter S. Prideaux, Goldsmiths' Hall, E.C.

* * *

AN examination will be held at Pembroke College, Oxford, and at Elizabeth College, Guernsey, on February 10, 1909, for one scholarship of £100 a year and one exhibition of not less than £50 a year, at Exeter College; one scholarship of £100 a year, and one exhibition of not less than £50 a year, at Jesus College; two scholarships of £80 a year, and one exhibition of at least £60 a year, at Pembroke College. No limit of age. Candidates must have been born in Jersey, or in Guernsey, or in one of the adjacent islands, or educated for two out of three years last preceding the election at Victoria College, Jersey, or at Elizabeth College, Guernsey. Apply to the Rector of Exeter College, by January 10.

* * *

SIX Stewart of Rannoch Scholarships, £25 each for three years, will be offered at Cambridge in May next: two for Hebrew, two for Greek and Latin, and two for Sacred Music, open to natives of the counties of Wilts, Somerset, and Gloucester, including the city and county of Bristol. Two Open Scholarships for Hebrew, and one Open Scholarship for Sacred Music, will also be offered.

Endowments and Benefactions.

THE Combe Trustees have made a further grant of £400 for the purchase of apparatus in connexion with the George Combe Lectureship in General and Experimental Psychology in Edinburgh University.

* * *

OXFORD Convocation has accepted the annual Scholarship for Rural Economy offered by the Surveyors' Institute.

* * *

A PLOT of ground (30 acres), lying immediately to the south-west of Shotover Plain, has been presented by a number of subscribers to the University of Oxford for public use.

* * *

THE delegates of the Common University Fund, Oxford, have voted a grant of £450 a year for seven years to provide for advanced history teaching. It is intended to organize a two years' course for students, either for research work or for the degree of B.Litt.

* * *

THE Pelham Memorial Fund (about £1,100) is to be applied to the maintenance of a Henry Pelham Studentship, tenable at the Oxford School at Rome under conditions similar to those attaching to the studentship already tenable by Oxford men at the British School at Athens.

* * *

DR. ARTHUR J. EVANS has presented to the Ashmolean Museum his father's (Sir John Evans's) collection of Anglo-Saxon jewellery and other relics, together with a comparative series illustrating the early Teutonic art of the Continent.

* * *

IT is proposed to devote the income of a fund collected by scientific friends of the Chancellor of Cambridge University to "Rayleigh Prizes," augmenting and supplementing the "Smith's Prizes."

* * *

IN connexion with the movement promoted by the Royal Geographical Society for the development of the Department of Geography at the London School of Economics, the following grants have been made:—The Mercers' Company, £210; the Goldsmiths' Company, £500; the Skinners' Company, £100.

* * *

MR. W. H. LEVER, M.P., has made an offer to the School of Architecture, Liverpool University, to enable it to undertake a systematic study of town planning, including all architectural aspects of civic design; £300 for a Commission to collect information abroad, and £500 to £1,000 a year for three years for continued research and instruction.

* * *

THE Institution of Gas Engineers has decided to endow a Chair of Fuel and Gas Engineering in the University of Leeds, in memory of the late Sir George Livesey.

* * *

MR. WILLIAM KNOX, grain merchant, recently left to the University of Aberdeen £5,000 for scholarships in Arts, Divinity, and Medicine. The Arts Scholarship, over £60 a year, will go to the best student graduating in double honours.

* * *

THROUGH the kind offices of the French Ministry of Public Instruction, the Board of Education have received from certain French publishers a very considerable number of educational books which were exhibited in the French Education Section of the Franco-British Exhibition. The firms which have co-operated in making this generous and valuable gift to the Board's Library are: Belin Frères, Librairie Armand Colin, Edouard Cornély et Cie., Librairie Ch. Delagrave, Delalain Frères, Hachette et Cie., Masson et Cie., H. Paulin et Cie.

* * *

THE REV. J. M. GORDON, Redhill, Surrey, has presented a further collection of minerals, some of them unique specimens, to the Geological Department of the University of Aberdeen.

* * *

MR. CHINUBHAI MADHOWLAL has given four lakhs of rupees (say, £25,000) to be applied by the Bombay Government towards the development of science teaching in Ahmedabad, in connexion, if possible, with the proposed Curline Institute in Bombay.

Appointments and Vacancies.

M. E. FANNIERE, L.-ès-L., Lecturer in French, University College, Nottingham, has been appointed Additional Lecturer in French at the Taylor Institution, Oxford.

In order to provide additional lectures for students reading for the Final Honour School in French, the curators have appointed M. Julien Jacques Champenois, Lic.-ès-L., Lic.-en-Droit, Agrégé de l Université de Paris, M.A. Edinburgh, to lecture on French Literature.

* * *

THE EARL OF DERBY has been elected Chancellor of the University of Liverpool, in place of his late father.

* * *

DR. WALSH, the R.C. Archbishop of Dublin, has been elected Chancellor of the National University of Ireland.

* * *

THE REV. GEORGE EDMUNDSON, M.A., D.Litt., formerly

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Fellow and Tutor of Brasenose, has been appointed Ford Lecturer for 1910.

* * *

The Rev. James Pounder Whitney, B.D. Cantab., formerly Principal of the University of Bishop's College, Lennoxville, Canada, has been appointed Professor of Ecclesiastical History at King's College, London.

* * *

Mr. D. G. Hogarth, M.A., Fellow of Magdalen College, Oxford, has been nominated Keeper of the Ashmolean Museum and the Antiquarium, in room of Dr. Arthur J. Evans, resigned.

* * *

The Keepership of the Archives of Oxford University is vacant by the death of the Rev. Thomas V. Bayne.

* * *

Prof. Adam Sedgwick, M.A., F.R.S., Professor of Zoology in the University of Cambridge, has been appointed Professor of Zoology at the Imperial College of Science and Technology at South Kensington.

* * *

Prof. Hillhouse, M.A., F.L.S., will retire from the Chair of Botany in the University of Birmingham at the end of the present session.

* * *

Dr. Ernest de Selincourt, Lecturer in Modern English Literature in the University of Oxford, has been appointed to the Chair of English Language and Literature in Birmingham University, in succession to the late Prof. Churton Collins.

* * *

Dr. Cecil H. Desch, D.Sc. Lond.. Ph.D. Würz., formerly Research Assistant in Metallurgy, King's College, London, has been appointed Graham Young Lecturer in Metallurgical Chemistry in Glasgow University.

* * *

Dr. George Macdonald, M.A., LL.D., has been appointed Dalrymple Lecturer in Archæology in the University of Glasgow for 1909.

* * *

Dr. A. Pearce Higgins, Lecturer of Clare College, Cambridge, has been appointed Lecturer in Public International Law at the London School of Economics and Political Science (University of London), in succession to Prof. Oppenheim.

* * *

Mr. William Evans Hoyle, M.A., D.Sc., Director of the Manchester Museum, has been appointed Director of the National Museum of Wales.

* * *

Mr. A. R. Skemp, M.A. Manc., Ph.D. Strass., Lektor in English in Strassburg University, has been appointed Lecturer in English in the University of Sheffield.

* * *

Mr. John Duncan Mackie, B.A. Oxon., has been appointed Lecturer in Modern History in St. Andrews University.

* * *

Prof. R. C. MacLaurin, Professor of Mathematical Physics in Columbia University, and previously Professor of Mathematics in the University of New Zealand, has accepted the Presidency of the Massachusetts Institute of Technology.

* * *

A Lecturer in Geography (for one year) is required by the St. Andrews Provincial Committee for the Training of Teachers. £200. Apply to James Malloch, Esq., 77 North Street, St. Andrews.

An Assistant in Invertebrate Zoology is required for the Free Public Museum, Liverpool. £150, commencing. Particulars from Director.

* * *

A Principal (graduate, with experience in the training of teachers) is required for the Day Training College, Dudley. £500. Apply to J. M. Wynne, Esq., Town Hall, Dudley.

* * *

Miss Wordsworth will resign the Principalship of Lady Margaret's Hall, Oxford, at the end of the current academic year.

* * *

Mr. Charles Henry Tyler, B.A. Cantab., assistant master, Rossall School, has been appointed Head Master of Cranleigh School, in succession to the Rev. Dr. Allen, retired.

* * *

Mr. J. Evans, M.A., has been appointed Head Master of Sir W. Judd's School, Tonbridge.

* * *

Mr. A. S. Lamprey, B.A., late Scholar of Corpus Christi College, Cambridge, assistant master at Maidstone Grammar School, has been appointed Head Master of Ashford Grammar School, Kent.

* * *

Mr. Thomas Hay, M.A. Cantab., B.Sc. Lond., F.C.P., Head Master of Midhurst Grammar School, has been appointed Head Master of Chelmsford Grammar School.

* * *

Mr. E. S. Hayward has been appointed Head Master of Wallingford Grammar School.

* * *

Mr. B. M. Narbeth, B.Sc. Wales, Lecturer in Physics at the Technical Institute, Swindon, has been appointed Principal of the Technical Institute, Durban.

* * *

The Rev. Julian Ll. Dove, M.A. Cantab., second master, Durham School, has been appointed Head Master of the Collegiate School, Whanganui, N.Z.

Literary Items.

A volume on the Post-Augustan Poets, by Mr. H. E. Butler, Fellow of New College, Oxford, will be issued by the Clarendon Press early this year. Mr. Nowell Smith's volume on the earlier Latin Poets, including the Augustans, which was announced several years ago, will, it is hoped, also appear during 1909.

* * *

The third volume of the "Cambridge History of English Literature" (Renascence and Reformation) may be expected early in the year.

* * *

Messrs. Witherby & Co. announce, for January 1, the publication of *Travel and Exploration*—a new monthly magazine devoted to travel in all its aspects (1s. net). It is to be popular in form, substantial in matter, and copiously illustrated.

General.

Letters Patent, bearing date December 2, have passed the Great Seal of Ireland, constituting and founding a University having its seat in Dublin, under the name of the National University of Ireland, and a University having its seat in Belfast, under the name of the Queen's University of Belfast.

* * *

A scheme has been started, and is under consideration by an influential committee of Oxford and Cambridge men,

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for the promotion of a University in China. "The main purpose is to attract into better channels the intellect of the more thoughtful and broad-minded Chinese of the rising generation, which is in danger of being diverted into anarchism and irreligion. It is believed that this may be best effected by setting before the youth of China the ideas and inspiration of Western learning."

* * *

THE University of Liverpool, following Manchester and Birmingham, has established the degree of Bachelor of Commercial Science.

* * *

IT is proposed to provide a college at Barry for the reception of 120 Glamorgan male students and 30 Monmouthshire male students, and at Caerleon for 60 Glamorgan female students and 40 Monmouthshire female students.

OPEN COURT.

Thay haif said . . .
Quhat say thay?—Lat thame say!

A BUDGET OF CONTROVERSIES: MAINLY OVER MORAL EDUCATION.

By Dr. F. H. HAYWARD.

THE more one dabbles or flounders in educational theory the more one realizes that the problems of sociology and psychology must be defined and, in a measure, solved before we can expect anything like intelligent and continuous advance. But the prospect is not cheerful. At the present moment, for example, we find in works such as "New Worlds for Old," by Mr. H. G. Wells, and "The Principles of Heredity," by Dr. Archdall Reid, the expression of a view of human progress in large measure opposite to that held by the advocates of "Eugenics"; the stress in the one case is on the potencies and possibilities that lie latent in stimulating ideas; the stress in the other case is on the hereditary potencies and possibilities (for good or evil) of the germ-plasm. The former view links on naturally with proposals for making the school-teacher more directly and explicitly than at present a moral instructor—an exponent of lucid, arrestive, alluring, perhaps far-reaching ideas; the latter view links on to the more conventional advocacy of "training" methods. Very probably the pedagogical question can best be approached from the sociological, biological, and psychological side; and for that reason, had I the time to spare, I would spend twenty continuous years in sociological study before putting a pen to paper again.

But twenty years of study, unremunerated though assiduous, are more than most of us can afford. And, even if we could afford it, and came forth in the end scientifically equipped for every pedagogical battle, the old controversies would meanwhile have been going on, new books and new articles would have been issued, new lights would have risen above the horizon, and perhaps the long looked for and badly needed educational prophet would have appeared and rendered our years of study superfluous. One is driven, therefore, to state one's present conclusions despite the conviction that wider knowledge will probably modify them.

On a good many questions vital to educational progress I want help, and it is in the capacity of a seeker that I write these words. Fresh from the Moral Education Congress, from books like Mr. Keatinge's "Suggestion in Education," and from an attempt to grapple with the dogma of "formal" or "faculty training," I propose to set down a few of my own thoughts and to propound a few interrogatories.

1. MR. KEATINGE AND "THE HERBARTIANS."

I appreciate Mr. Keatinge's book, "Suggestion in Education." It is helpful, hopeful, constructive, stimulating. It is, on the whole, singularly free from conventional phrases. The rich vein in which the author is at work is a promising one, which will last for many a lifetime and will grow broader as he and others follow it up—not ending, as so many educational veins do, in valueless dirt and flinty rock. When he speaks of the teacher as being a "creator of mind" in the process of manipulating and organizing (the pupil's) "mental elements"; as being a true producer of "mental energy"; as being one who "builds an ideal construction in boys' minds," which construction "exercises a control on conduct," Mr. Keatinge is on the side of the angels. Such language sends a thrill through every teacher who is not yet fossilized.

But then these phrases about creating mind and producing energy are the phrases used by Herbartians. In 1905 I said in a little pamphlet: "We have to realize, with Herbart, that there is a primal vitality, a creative power, a transforming energy, in ideas." I think I took the notion from Wundt and at second-hand. Again, when Mr. Keatinge attacks snippets (page 56), and formal training (page 67), and the faculty doctrine (page 107), and praises humanistic subjects because by means of them "moral ideas can be introduced" (pages 160–1), he is on our side or we on his.

These, however, are broad and untechnical issues. There are other things in Mr. Keatinge's treatment which come under another category. There is an adoption, it seems to me, of Herbartian psychology—or the language of Herbartian psychology—even to its minor details.

Now, for my own part, I am an Herbartian only in a vague sense. The intimate relationship between instruction (or some equivalent of instruction), apperception, interest, and character is all the Herbartianism for which I care, and it is quite independent of any Herbartian psychology. I have rarely employed Herbart's metaphors about "contrary ideas," "fusion of ideas," and the rest. But Mr. Keatinge has deliberately and elaborately done this. He endows ideas with "energy" and "intrinsic virility," which "energy" or "virility" is reduced to "inertness" or "latency" when ideas pass beyond the "margin." He speaks of ideas "blocking" or "obstructing" or "checking" each other, "competing" with each other or "impinging" on each other from different sides of the "blocked point." He speaks of ideas "sinking" and "shooting up," forming "great masses" or "groups of ideas," and "setting the mechanism in motion." He speaks of "systems of ideas," of ideas "filling the centre of consciousness," of "centre points for idea systems," of "small idea systems left to float," of "meaning being imposed upon new ideas," and he goes a length from which most Herbartians would shrink when he speaks of "ideas that will produce interests."

I have never in my life employed the minute terminology of Herbartianism in this wholesale way. I have shrunk from it as too fatally complete and too repulsively technical. I have, indeed, done little more—as Mr. Keatinge says—than "coquette" with this "outworn psychology." I did not know that so desperate a flirt as Mr. Keatinge was already in the field ruthlessly cutting me out, or I might have "coquetted" more adventurously. The truth is that I have felt all the time that the goddess was a trifle faded, though beautiful yet in spots; so I have timidly apologized for her perhaps, sometimes going even so far as to utter a warm word of chivalrous appreciation. But never has my admiration been so whole-hearted as Mr. Keatinge's. He calls her "outworn"; but, with all her faults of age and temper, he loves her still—every inch of her.

Banter apart, I would ask whether Mr. Keatinge's extensive employment of even the minute terminology of Herbartian psychology does not prove the usefulness, convincingness, or at least the immense plausibility of that terminology? I can draw no other inference. I am glad he uses it. I believe he uses it because he sees that, though it explains nothing ultimately, it brings us closer up to explanation than the terminology of the "faculty" psychology. Heterodox and half-hearted myself, I therefore welcome him as leader of the straiter sect of the Herbartians; and, as my hand meets his, I offer a suggestion that may serve to fill up a serious gap in his own teaching.

2. "CONTRARIANT IDEAS."

I refer to the mystery that surrounds his "contrariant ideas." Now Herbart talked of "contrary ideas," and described them as "checking" each other. Mr. Keatinge has noticed a similar phenomenon in moral education. Direct attempts to deal with moral questions at school awaken "contrariant" ideas in the bosoms of schoolboys.

Now what is the origin of these ideas? Mr. Keatinge hints at "boredom," and I frankly concede that, if teachers are bores and duffers, they will awaken "contrariant ideas" not only in the course of moral instruction, but in the course of geography and every other subject. Mr. Keatinge's experience of teachers seems to have been unfortunate; moral instruction consists of "assaults on a boy's moral standard," "attacks upon his code of

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morals." I admit the whole case for "contrariance" if our teachers are of this breed; neglectful in allowing a bad code of morals to grow up under their noses, arbitrary and tactless in "assaulting" it. The head master's minatory address in "The Hill," or an exhortation of a still cruder kind, seems the only type of "direct moral instruction" of which secondary masters have any conception.

This matter is vital to an understanding of what is intended by the advocates of moral instruction. If opponents will insist on retaining in their minds either a picture of Miss Montflathers bullying little Nell, or of some grotesque pedagogue of their own acquaintance (or imagination) falling into a fury at a boyish freak or at some youthful defiance of rules, all hope of convincing them is vain; they are hopelessly biased and unimaginative, "inaccessible," as Matthew Arnold said, "to ideas," living examples of the truth underlying Bernard Shaw's taunt "that every man over forty is a scoundrel."

Moral instruction implies (for its advocates) appeal to the personality, the conscience, the reason, the idealism of the youth. For my part, I do not believe for a moment that stories of heroism or effort, told or read to a class and accompanied by a few words of frank and rational discussion, will awaken contrariant ideas at all; they will rather awaken "similar ideas," "apperceiving ideas"—provided the previous experience and education of the child has not been gravely at fault. I know little except by hearsay of the typical public-school boy, but I know something of pupil-teachers, and I have generally found them responsive to the discussion of serious topics of morals or politics. My belief is—and I find it confirmed by such authorities as Dr. Stanley Hall and his disciple, Dr. J. W. Slaughter—that adolescence is "the golden age of adult influence, provided it is wise enough not to offend." The years when conscience, reason, and personality are developing by leaps and bounds are precisely the plastic years when—I will not say direct moral "instruction" if the last word is offensive, but—direct moral elucidation, illumination, suggestion, or something of this kind will be specially craved and assimilated. But, I repeat, if the instruction is of the kind described by Mr. Keatinge ("attacks," "assaults," &c.) it will certainly be worse than ineffective.

Our critics seem hard to please. "Assaults upon a boy's moral standards" they regard at one moment as likely to awaken "contrariant ideas." We agree. Such methods are peculiarly reprehensible. The teacher should, in adolescence more particularly, appeal to the youth's reason, conscience, and personality. But this will not please our critics either. There should be no "reasoning" about morals, no abstract or general treatment of such weighty themes: the teacher should deal with them "incidentally," "as occasion serves"—in other words, "when some offence has been committed." Thus, we are back again at "assaults upon a boy's moral standards."

But this "contrariance" question needs further discussion. I admit "contrariance." I thank Mr. Keatinge for teaching me that word, and presently I will do something which he himself has not done—namely, give an explanation of the phenomenon. But, first, I distinguish pseudo-contrariance from real.

Contrariant *passions* are not, I think, directly intended by Mr. Keatinge. His contribution to educational terminology would be a small one if he were but emphasizing the fact that there is a good deal of the animal in us yet. Nor are contrariant *habits* his theme. Passion and habit are serious questions for all of us, and there is no need of a new treatise to convince us of the fact. And let me add here that I think opponents of moral instruction have been dwelling too much on the one or two graver problems of moral education, where acute temptation is almost inevitable; while supporters of moral instruction have been thinking more of social and civic duties, in performing which temptation need scarcely assail at all, and to which, once we have seen (or apperceived) them, we may say

> Nor know we anything so fair
> As is the smile upon thy face.

The distinction is important. Our opponents are thinking of a few conventional virtues (Mr. Paton's list rarely goes beyond diligence, thoroughness, truthfulness, honesty, and purity). We, too, are thinking of these; but we think of others also—of some only just rising above the moral horizon of the world—and we believe that, in the case of these virtues, there need be little or no conflict at all. Illumination will lead to action; volition will follow insight. Even to-day decent men feel no *temptation* to be dirty or boorish, and in centuries to come they may feel no temptation to be selfish or lazy. In short, the advocates of moral instruction regard human nature as in less desperate way than the opponents.

Admitting, however, the existence of "contrariant" passions and "contrariant" habits, I pass on. Direct instruction, I agree, is only one out of many weapons when these enemies of the moral weal have to be assailed. Against them both there is the weapon of "many-sided interest" whose potency I have elsewhere discussed; and there are other weapons, too—such as religion. I smile when I find the Herbartians (including myself) regarded as mere champions of "direct" methods in the place of indirect.* I thought every one knew that Herbart and his followers emphasized the almost total inadequacy of direct methods when employed in a vacuum where apperception is impossible. Was it not Herbart who said that "the individuality must first be changed through widened interest . . . before teachers can venture to think they will find it amenable to the general obligatory moral law"? And when, similarly, I find our opponents, apparently in ignorance of what may be called the "downfall of the dogma of formal or faculty training," assuring the world that training is more important than instruction, I smile again (though this time rather bitterly) and recollect that Herbart elaborately distinguished between the functions of instruction, training, and school discipline, wrote page after page on each of the three, and showed their mutual relations and relative values. One almost sickens of controversy when one is reminded, by men who apparently have never in their lives read a scientific work on pedagogics, that we must not "omit" or "forget" this or that, when we have no desire but to remember.

But my proffered explanation of "contrariant ideas" has not been forthcoming. The reader shall now have it.

I assert that—after we have made a certain allowance for adolescent secretiveness, for an apparent, though not real, philistinism on the part of youth, for a refusal to be demonstrably sentimental and responsive, for what has been called by students of pedagogics a "low power of expression"; and after we have made the other allowances detailed above, for incompetence on the part of pedagogues and for the existence in us all of a sensual life—if ideas "contrariant" to reasonable morality arise in the minds of our pupils, the fault is with our educational methods.

We must deliberately or unintentionally have adopted a *tabu* of moral topics, and regarded them as "bad form," in the pursuit of which policy we must not only have neglected to supply copious apperception material, or (what is much the same thing on the verbal side) a copious moral terminology, through the agency of indirect moral instruction; but we must also have shown, by our attitude towards such moral matters as have fitfully presented themselves in school life or in our school subjects, that the less said about them the better. If this explanation be the true one, "contrariant ideas" towards moral instruction or elucidation of a systematic kind, are seen to be almost inevitable. *Tabu* is no novelty in human life. If we allow our schools to frown on hard work as mere "swotting," and on the discussion of serious topics as a form of "priggishness," of course "contrariance" will arise.

Now every public-school opponent of moral instruction bears witness to this *tabu*, little recognizing, as a rule, that he is helping some of us to fill the mysterious gap in Mr. Keatinge's psychology. "The better the class and the better the master the less will be said" is Mr. Paton's way of expressing it. The attitude adopted by all secondary-school opponents of moral instruction must indeed strike the primary teacher as amusing in the extreme. For all these years he has been expected, in his religious or Biblical lessons, to deal most expressly and directly with moral laws; he has had to do this whether he wished or no, and he has had to do it (horror of horrors!) in a "watertight compartment," bounded by 9 o'clock a.m. on one side and 9.45, or thereabouts, on the other. And the primary teacher has been at least sufficiently competent to be able to prevent, so far, the emergence of "contrariance." His Bible lessons may not have been perfect, but they are not commonly supposed to have created a hatred of moral topics. This latter is the crowning glory of secondary education, and it is a glory (or an infamy) which any one with an elementary acquaintance with Herbartianism could have predicted. "Keep back the supply of apperception material, and you will fail to build up an apperception organ"; that is the negative side of the process, and it explains why our public-school boys are, as one of their defenders admits,

* *E.g.*, by Mr. Keatinge. See the contributions to the recent Moral Education Congress (page 132).

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"morally colour blind." Link on to the mention of moral topics, the idea that such topics are *tabu*, make fun of the word "moral," scatter broadcast the word "prig," and you will produce the phenomenon of "contrariance" as inevitably as if you link on to the idea of hard study the notion that it is underbred "swotting."

That is my solution of the "contrariance" enigma, and I would point out that no reports of "contrariance" to moral instruction or discussion come from Japan or from Catholic colleges, or from any institutions except English public schools. Nor, in reading Mill's "Autobiography," have I found any recorded traces of a "contrariant" attitude towards his father's "moral inculcations," "grave exhortations," or "stern reprobations" relative to "justice, temperance, veracity, perseverance, readiness to encounter pain, and especially labour, regard for the public good, estimation of persons according to their merits," and so forth; the explanation being that James Mill took his son into his confidence and appealed to his reason.* Since the time of Locke it is illegitimate to speak of ideas that have no origin or antecedents: and if "contrariant" ideas exist, their origin must be traceable, and I have traced it. Mr. Keatinge, on the other hand, has suggested no origin at all but one that is applicable to all lessons (geography, &c.) that are dull.†

I admit, however, that if once "contrariant ideas" have obtained a footing in the soul, Mr. Keatinge's plan may be advisable; the teacher may advisably be very, very "reticent"; very, very "discreet"; very, very capable of "diverting the boys' attention from the moral undercurrent of their work"; and very, very fastidious to preserve the "covering of reserve." And I admit freely that if the phrase "moral instruction" is offensive, there is no need to press it; and that, as to *method*, an organized series of literary readings, or of biographies, or of discussions, or of sermons, or of talks, or whatever plan may be found most convenient, will satisfy the advocates of moral instruction. What will *not* satisfy them is a perpetual and unintelligent confusion between "training" and "instruction" (or its equivalent); or the employment of conventional and almost hypocritical expressions concerning "atmosphere," "personality of the teacher," and the like—expressions which, through their very obviousness, are perfectly useless, and merely mean that the problem of a renovated curriculum is to be shelved.

(*To be continued.*)

THE TEACHERS' REGISTRATION COUNCIL.

LETTER FROM THE BOARD OF EDUCATION.

THE following letter from Sir R. L. Morant to Dr. Gow, dated November 17, 1908, is the Board of Education's reply to the letter from the delegates printed in our last number (see page 527):

I am directed to send the following reply to the letter concerning the constitution of a new Teachers' Registration Council which was addressed to the President of this Board by some of the delegates of the twelve educational societies who before addressed him on this subject, and was forwarded by you on October 25.

1. The Board learn with regret from that letter that your Committee have apparently been unable to agree together upon any effective amendments of their original scheme which would make the new Council to a greater degree "representative of the teaching profession" as required by the Act of Parliament.

2. The Board find it difficult to understand how your Committee could see fit to resolve that "the plan of the Registration Council already recommended be further pressed upon the Board of Education," in spite of the earnest protests submitted to your consideration from various important branches of the teaching profession against the non-representative character of the proposed Council and against the exclusion from it of all direct representation of those branches of the profession.

3. The Board note with surprise that your Committee have not invited to their more recent gatherings, and have apparently in no way consulted, any representatives of those branches of the teaching profession that had thus expressed their sense of injustice at having been excluded from deliberations of such importance to their professional interests. It seems to the Board very difficult to suppose that this treatment of the problem will be likely to lead to the establishment of a Council that will be regarded as "representative" in any complete sense by "the teaching profession."

4. The Board are, however, interested to learn that there were "some members of the Committee who thought that certain modifications of the plan submitted to the Board might be desirable"; and I am to state that if you, or your Committee, or those individual members, would submit those "modifications" to the Board in writing, with a clear indication of the difficulties or anomalies or injustices which they are respectively intended to remove, and of the manner in which they would operate in practice, this Board would gladly give them the most careful and favourable consideration, and would bring them to the notice of such branches of the teaching profession as would be likely to be interested, with a view to obtaining a general consensus of professional opinion upon them.

5. The Board must, on the other hand, demur emphatically to certain propositions contained in the letter under reply, *e.g.*, (i.) that modifications of your proposals for the composition of the new Council, which would render it more truly representative of the teaching profession as required by Parliament, "can only be made by the Board"; (ii. that this "Board alone is in a position to arbitrate between rival claims" of different sections of the teaching profession who find themselves accorded no direct representation in your proposals; and (iii.) that it is, therefore, now incumbent on this Board (for this is what the letter implies) to formulate a scheme for the solution of the difficulties involved in your Committee's proposals, and to take steps at once to bring into existence a new Teachers' Registration Council with a view to the speedy establishment of an official Register of Teachers for this country.

6. In reply to this part of the letter, the Board find themselves compelled to remind you that the express purpose for which Clause 25 was introduced into the Education Bill, 1906, and again into the Bill of 1907, was to make it no longer necessary in view of the insoluble difficulties that had arisen in connexion with the then existing Register) that there should be any official Teachers' Registry at all, so far as the Government or any Government Department was concerned. It is true that subsequently, quite late in the course of the debates on the Bill in the House of Lords, an amendment to this clause was added at the instance of representatives of certain educational bodies. The purpose of the amendment was to leave the door open for the possibility of there being at some future time an official Teachers' Register, if and when (but, as was clearly understood, only if and when) proposals were forthcoming for a Teachers' Council and Register which should be truly representative of the teaching profession, and the constitution of which no substantial body of teachers in this country should look upon as involving any injustice. And, as you will remember, one of the essential elements in the arrangement under which the amendment was at the time inserted in the Bill, was that proposals for such a Council and Register were to be evolved by the teaching profession itself, and were not to be the work of any Government Department. In these circumstances it is obvious that it would not be proper for this Board, as you have suggested, now to intervene to impose its arbitration upon any "rival claims" of different portions of the teaching profession. For it would clearly contravene the whole principle upon which the new Council and Register were (by common consent) to be based were this Board to step in and to fix, by Departmental action instead of upon proposals made by the teaching profession, the constitution and composition of the new Council. Yet this is precisely what would result were this office, as you suggest, now to determine the various "modifications" of the proposals of your Committee needed to remove the many difficulties that are involved in them, as pointed out to you and your colleagues at this office last May and confirmed by the correspondence from the various Educational Associations addressed to this Board and to your Committee.

7. The President of this Board greatly regrets the delay that has occurred in this matter since the passing of the Act, in consequence of the ineffectual nature of the proceedings of your Conference since that date, resulting, it would seem, from their insufficiently representative character. He desires it to be made perfectly plain that this Board are and have always been anxious to receive, as soon as possible, from the teaching profession proposals for a new Teachers' Registration Council which are considered just and fair by the various branches of the profession, since by this means, and by this means alone, will it be possible for the requisite steps to be taken, in accordance with the provisions of the Act, for bringing about the establishment of a new Council without further delay. I am, therefore, directed, in conclusion, to repeat that the Board will be glad to receive a clear, written statement of the particular "modifications" considered desirable by some members of your Committee if it is believed that they would, in fact, produce a constitution for a Council so composed as substantially to fulfil the requirements of the statute in being really "representative of the teaching profession."

* "Conformably to my father's usual practice of explaining to me as far as possible the reasons for what he required me to do."—"Autobiography."

† I would add that the experiments of Dr. Boris Sidis, from which Mr. Kea inge gathers encouragement, were absolutely arbitrary and meaningless, whereas advocates of moral instruction have the idea that genuine morality is rational and meaningful. Until our opponents clear their minds of the notion that such instruction is a process of mingled humbug, bullying, fume, and tyranny, we can make no progress in mutual understanding.

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Besides the foregoing letter, and the letter it answers, there are included in a White Paper (Cd. 4402; 2½d., Wyman) the letters (omitting some which were addressed to the Board by private individuals) which have, up to the present, been received by the Board since the publication on July 10 of the "Scheme for a new Teachers' Registration Council proposed to the Board of Education by the representatives of certain Educational Associations." [Cd. 4185.] In each case they were suitably acknowledged, and a copy was sent to Dr. Gow for the information of his Committee. The twenty letters may be conveniently grouped in the following six categories:—(*a*) teachers of little children, (*b*) teachers of art and drawing), (*c*) teachers of music, (*d*) teachers of manual training, (*e*) teachers of special subjects, such as shorthand, gymnastics, &c., (*f*) associations of head teachers, as distinguished from assistant teachers, (*g*) teachers of the deaf. For convenience of reference the proposals of "the representatives of certain educational associations" are again set out in an appendix.

LETTER FROM THE TEACHERS' GUILD.

Mr. H. Wesley Dennis, Chairman of the Teachers' Guild, has addressed the following letter on behalf of the Guild to the Secretary to the Board of Education (December 18):—

At a meeting held on December 10, the Council of the Teachers' Guild considered the White Papers (Cd. 4185 and Cd. 4402) relating to a Scheme for a new Teachers' Registration Council, and instructed me to embody in a letter to you the conclusions which were then drawn and adopted by the meeting with virtually no difference of opinion.

The formation of a Register that should include duly trained and qualified teachers of every grade has been one of the main objects of the Teachers' Guild ever since its foundation. While conscious of the inherent defect which vitiated and eventually wrecked the old Register—a radical error against which the Guild from the first protested—it was with profound regret that the Guild learnt the determination of the Government in 1906 to abolish the Register instead of amending its constitution. With no less satisfaction they welcomed Section 16 (2) of the Education (Administrative Provisions) Act, 1907, as the promise in the near future of a new Register that would represent the teaching profession as a whole, with no invidious distinction of rank as determined by employment.

The draft Scheme for a Registration Council proposed and received unanimously at the meeting of Delegates held at the College of Preceptors on February 29 last was submitted to the Council of the Guild on March 5 and unanimously approved. It was not, in their judgment, an ideal scheme, and there were various minor points in which it seemed to some members capable of improvement; but the Council considered it sound in principle and a fair compromise between the conflicting claims of primary and secondary teachers, which the old Register had so disastrously discriminated. They considered, further, that any defects or omissions in the scheme could and would be remedied and made good by the Board of Education.

The Council regret, therefore, to gather from the published correspondence, and in particular from your last letter to Dr. Gow, dated November 17, that this is not the view of the President of the Board. In it you speak of "the possibility of there being at some future time an official Teachers' Register, if and when (but only if and when) proposals were forthcoming for a Teachers' Council and Register which should be truly representative of the teaching profession, and the constitution of which no substantial body of teachers should look upon as involving any injustice."

My Council desire, with all respect, to point out that the condition you now impose is not contemplated in the Act of 1907 and is one that it is impossible for teachers to satisfy. A Council to which each separate body of teachers sent a representative would be unworkable by reason of its numbers and, further, by reason of the disproportionate representation, it would not be truly representative of the teaching profession. Already some twenty more or less "substantial" bodies of teachers have submitted to the Board claims for representation, and there are other bodies to come whose claims would deserve at least equal attention. There exists no parliament or judicial committee of teachers competent to hear and adjudicate upon such claims. The delegates who at your instance attempted the task and who have in your judgment so signally failed, decline, for the sufficient reasons assigned by their Chairman, to take any further action.

In conclusion, my Council would humbly suggest to you that the Board of Education is the only court competent to arbitrate upon rival claims and that it is to the Board of Education that Parliament has assigned the duty of "constituting a Registration Council representative of the teaching profession." They therefore appeal through you to the President of the Board to take immediate steps for the issuing of an Order in Council under the Education Act of 1907. Thus and thus only can he remedy the grave injury that the teaching profession has suffered and is suffering by the suppression of the Register.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on December 12. Present: Prof. Adams, Vice-President, in the chair; Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Mr. Brown, Miss Crookshank, Miss Dawes, Mr. Eve, Mr. Hawe, Mr. Kelland, Mr. Ladell, Rev. R. Lee, Prof. Lyde, Dr. Maples, Dr. Marx, Mr. Millar-Inglis, Dr. Moody, Mr. Morgan, Mr. Pendlebury, Miss Punnett, Mr. Rule, Rev. Dr. Scott, Mr. Starbuck, Mr. Storr, Mr. Vincent, and Mr. White.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Certificate and Lower Forms Examinations had been held on December 8–12 at 150 centres in the United Kingdom and at 30 Colonial centres. The number of candidates entered was about 6,700. For the Christmas Examination of Teachers for the College Diplomas the number of entries was about 570.

The best thanks of the Council were voted to Mr. John Angell, who was compelled, on account of the state of his health, to resign the office of honorary Local Secretary for the College at the Manchester Centre, the duties of which he had discharged most efficiently for thirty years.

The Diploma of Licentiate was granted to Mr. F. W. Towle, and that of Associate to Miss E. M. Anderson, who had satisfied the prescribed conditions.

The Secretary was directed to express to Mrs. Stewart the profound regret with which the Council had received the intelligence of the death of her husband, the Rev. John Stewart, who had been for more than thirty years a valued member of their body.

The report of the Finance Committee was adopted.

The consideration of the report of the Examination Committee was deferred to the adjourned meeting of the Council to take place on January 23.

The draft report of the Council to the General Meeting was considered, and was referred to the President, Vice-Presidents, and Dean for final revision.

It was resolved that the Council should make a representation to the Board of Education protesting against the phrase "conducted for private profit" employed in official documents to designate schools founded and conducted by private enterprise.

The following persons were elected members of the College:—

Mr. C. A. Dobson, B A., Victoria House, Shahginig, Agra, India.
Mrs. M. E. Pillow, The Grange, Thorpe Road, Norwich.

The following books had been presented to the Library since the last meeting of the Council:—

By A. & C. BLACK.—Farrar's Eric (Supplementary Reader); Fairgrieve's The Round World.

By BLACKIE & SON.—Teacher's Handbook to Blackie's Adaptable Arithmetics, Book III.; Archibald and Rankin's Electrical Laboratory Course for Junior Students; Cochrane's Three-Term Course in German; Lee's School History of English Literature, Vol. III.; Ruskin's The Crown of Wild Olive.

By the CAMBRIDGE UNIVERSITY PRESS.—Davies's Sophocles' Electra (abridged from Sir Richard Jebb's Edition); South's Gospel of St. Luke; C. W. Watson's Acts of the Apostles; Foster Watson's The English Grammar Schools to 1660; Winstanley's Chaucer's Clerkes Tale and Squieres Tale.

By MACMILLAN & CO.—Dowse's Book of Poetry illustrative of English History (Part III.).

By METHUEN & CO.—Dunstan's Organic Chemistry; Rahtz's Junior English; Terry's Elementary Latin.

By J. MURRAY.—Harlog's Hugo's Bug-Jargal.

By the OXFORD UNIVERSITY PRESS.—Select English Classics edited by A. T. Quiller-Couch (14 Parts).

By WHITTAKER & CO.—Monteverde's Spanish Idioms, and Spanish and English Commercial and Technical Terms.

Transactions of the Second International Congress on School Hygiene, 1907.

CONFÉRENCES FRANÇAISES.

SOCIÉTÉ NATIONALE DES PROFESSEURS DE FRANÇAIS.

ELLE ET LUI.

Par M. l'Abbé MARGUERÉ.

LE samedi, 28 novembre dernier, M. Margueré nous parlait de George Sand et d'Alfred de Musset. Le conférencier, en traitant ce sujet littéraire et psychologique à la fois, au point de vue de l'homme du monde, et du moraliste surtout, en a fait ce que l'on pourrait appeler une conférence à thèse, et a surtout appuyé sur les leçons que l'on en peut déduire.

Ces deux grandes célébrités du siècle dernier, nous dit-il, semblaient, sinon tomber dans l'oubli, mais voir du moins leur

éclat s'assombrir, et voici qu'une histoire d'amour va les ressusciter à la gloire, "ce soleil des morts," et nous les faire revivre dans toute la splendeur de leur génie.

Mais il est une chose certaine, et qu'il faut dire dès le début, c'est que cette liaison fit une impression profonde sur Musset et changea pour ainsi dire la direction de son talent. Il fut frappé au cœur. Il avait aimé pour la première fois, et les "deux grands yeux noirs de la Sand" devaient le hanter toute sa vie.

"Ôte-moi, mémoire importune,
Ôte-moi ces yeux que je vois toujours."

Il s'est heurté à l'un de ces accidents rares, extraordinaires, dont on ne cite que quelques exemples : une grande passion. Heureuse passion, dirons-nous, car elle devait avoir sur lui une heureuse influence. Le poète de *Rolla* deviendra le poète des *Nuits*, et ce que son talent perdra en variété et en richesse, il le gagnera en intensité. George Sand sera la femme grâce à qui nous seront révélés chez Musset le cœur et le génie.

George Sand, au contraire, n'a pas du tout ressenti les mêmes effets. Ce n'a pas été une date dans l'histoire de son cœur ni de son esprit ; elle n'a pas fait dévier d'un pas cette vie qui, au point de vue littéraire, s'est écoulée avec la plus grande régularité.

Deux causes suffisent amplement pour expliquer leur mésintelligence et leurs querelles. L'un et l'autre avaient un passé derrière eux lorsqu'ils se sont connus. Musset, il est vrai, était touché au vif et aimait profondément. Mais il rêvait d'un amour idéal, surhumain, qu'il ne pouvait trouver dans son amie, culte et délire à la fois. George Sand rêvait pour son "cher enfant" une sorte d'affection semi-maternelle. Elle jouait vis-à-vis de Musset au rôle protecteur d'Ange Gardien.

En outre, ces deux êtres d'exception étaient trop auteurs dans leur liaison. Au lieu de cacher leur vie, ils l'ont étalée au grand jour. Ils l'ont mise dans leurs écrits — ce que M. Doumic appelle si bien du "cabotinage littéraire" — et le monstre romantique s'est plu à torturer cet homme et cette femme qui avaient voulu prendre leurs héros en dehors de toute réalité, et se mettre au-dessus de la nature comme les Hernani et les Lélia. Pour nous en convaincre, lisez les *Lettres d'un Voyageur*, de Sand, et surtout la *Confession d'un Enfant du Siècle*, de Musset, qui restera comme l'histoire d'un cas, comme un chapitre de psychologie morbide et de marivaudage effréné.

Nous autres, à plus de cinquante ans de distance, nous sommes obligés de constater que les êtres qui nous sont supérieurs par le génie, n'en sont pas moins faits de boue et de chair comme nous. Le génie lui-même ne dispense pas ses privilégiés d'avoir part à l'humaine misère. Et George Sand, à son retour à Paris flanquée du fameux docteur Pagello, dut vite s'apercevoir que le monde ne peut pas admettre qu'il y ait des privilégiés, ou plutôt des dispensés en morale.

De toutes ces considérations que se dégage-t-il ? Faut-il conclure, comme l'un de nos plus célèbres moralistes, à l'impuissance d'aimer ? Nous serions tentés de croire que, comme Musset et George Sand, nous souffrons de la maladie du siècle. Nous doutons, alors que nous avons un grand besoin de croire. Il est un des appétits de l'homme qui, à l'heure actuelle, reste inassouvi et dont on semble ne vouloir plus s'occuper : c'est le besoin de l'au-delà, besoin qui nous est venu de nos ancêtres, transmis de génération en génération par les croyants de toute religion. Nous avons hérité de ce besoin, il s'est infiltré pour ainsi dire dans nos idées, nos mœurs, nos habitudes, notre milieu, et comme cette faculté, ce besoin de l'au-delà demande à s'exercer, veut vivre, de force elle se dépense en d'étranges excès. Nous sommes des névrosés, des neurasthéniques. Voilà le grand mal dont nous souffrons. Nous souffrons aussi d'un autre mal qui minait ces deux grands génies, qui est un excès de pensée critique. Pour nous guérir, il faudrait donc que l'équilibre de la vie intérieure fût corrigé par une volonté forte et énergique. Il faudrait surtout que cet équilibre fût restauré, que le mariage redevînt saint et sacré, que la femme fût la compagne de l'homme, que l'enfant ne se gâtat pas les sens et l'imagination entre les murs de ces collèges, si bien appelés "des sentines d'infection morale."

Mais utopie que tout cela ! Nous marchons vers un affinement de plus en plus aigu des intelligences, vers une séparation de plus en plus marquée des sexes, vers une centralisation de plus en plus intense, et alors se vérifiera le mot de l'observateur : "Les classes pauvres manqueront de pain, les classes riches d'idéal, de religion, de santé morale, d'influence et de prestige."

Je finis, conclut le conférencier, par un mot de Musset dans une lettre suprême où il semblait défier les profanateurs d'outre-tombe : "Prenez garde que je n'écrive sur ma tombe qu'elle était sincère, bonne et grande."

Paix et pardon, disait la grande romancière à Sainte-Beuve. Ce sera aussi notre dernier mot. Paix et pardon pour ces deux tristes victimes de l'amour romantique, non point tant parce qu'ils ont aimé, mais parce qu'ils ont beaucoup souffert.

M. l'abbé Margueré s'est magistralement acquitté d'une tâche difficile, que sa qualité de prêtre et de moraliste a su sauvegarder d'un banal réalisme et élever à la hauteur d'une thèse morale. En vain M. Barlet, qui était au fauteuil, a-t-il invité la discussion, et, se retranchant lui-même derrière sa qualité de profane pour ne point approfondir un sujet de si poignante actualité, il a demandé pour le conférencier un vote de remerciements bien mérités, sûr qu'il était que les personnes présentes emporteraient de cette conférence ample matière à sérieuses cogitations.

OXFORD AND THE WORKERS.

RECOMMENDATIONS OF THE COMMITTEE.

THE Report of the Committee on Oxford and Workpeople, just published at the Clarendon Press (1s. net) has been drawn up with great care and is satisfactorily comprehensive in scope.

There are interesting chapters on the educational movements, particularly affecting workpeople, on the past history of the University, on the University Extension movement, on the demand for University education, on the establishment of tutorial classes beyond the limits of the University, on the admission of workpeople to Oxford, and on the after career of the working-class students.

Following is a summary of the Committee's recommendations :—

1. Teaching beyond the limits of the University.—Lectures and tutorial classes—consisting of not more than thirty students in each class—should be formed in certain centres, to undertake organized study for minimum periods of two years. A diploma under the authority of the University Extension Delegacy should be given at the close of the period of study based on the essays written by the students on the report of the tutor and of two University representatives ; this diploma should admit students to the diploma courses of the University. (The Committee for Economics have accepted this proposal.)

2. Admission of working class students to Oxford.—Qualified students from the tutorial classes should be readily admitted to residence at Oxford ; the colleges and trustees of the University Appeal Fund should be asked to provide scholarships, exhibitions, and financial assistance, the selection of members to these privileges being based on the report from a committee of selection, consisting of the class teachers, the two University representatives, a representative of the Workers' Educational Association, of the local organization, and the class. A Standing Committee of the University Extension Delegacy should organize funds for scholarships and so forth, to be tenable either at a college or hall of the University, by a non-collegiate student or at Ruskin Hall.

3. The position and payment of teachers.—The teachers should be paid £80 per unit of twenty-four classes (the year's course) : in other words, £400 per session of twenty-four weeks, when in full work, and travelling expenses in addition. They should be regularly employed by a college or by the University at Oxford. One-half of the teacher's salary should be paid by Oxford, the remaining half and all other expenses by the workers and their associations.

4. The Authority for organizing working-class education.—A Standing Committee should be formed of the University Extension Delegacy, consisting of equal numbers of University representatives and of representatives of the working classes appointed through the Workers' Educational Association. The Committee, through its secretaries, should conduct all correspondence between Oxford and working-class centres.

5 Ruskin College.—Residence for a year at Ruskin College, and a certificate given by a college and supported by two University representatives appointed by the Committee of Economics, should be accepted as the "good general education" required to qualify for the study of economics. In any scholarship scheme second-year students of Ruskin College should participate.

6. Diploma in Political Science.—A Diploma in Political Science should be established paral el to the Diploma in Economics.

7. Special Inquiry Department.—A special department should be formed by the University to collect information about the educational needs and educational movements in this country and abroad.

The report is supplemented by a number of appendixes, in which the main features of the work already done and the work proposed to be done are described, and in which the text of the report is illustrated by University and Government documents.

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REVIEWS.

Early Irish History.

The History of Ireland to the Coming of Henry II. By Arthur Ua Clerigh, M.A., K.C. (12s. 6d. net. Fisher Unwin.)

One can readily accept the author's statement that "this volume is the fruit of many years' labour." In the earlier chapters he has to deal with a great variety of matters that call for expert knowledge and for the most cautious expert inference. The traditional stories are embroidered with a lively fancy and seem rather difficult to get within the bounds of history at all, except in so far as they supply incidental indications of religious, social, or other conditions. Mr. Clerigh is pretty well up to date in his applications of anthropology and archæology, and he thinks "it may be safely stated as a general rule that, whenever anything is stated to be a fact in connexion with an etymology, in nine cases out of ten it is sure to be pure fiction." Yet, though he thus seems to be on his guard, he goes only fourteen pages before he perpetrates this: "'Sacra,' sacred, is in the Greek ἱερὰ, which comes near πίειρα (ἄρουρα) and ἱερνη, the Greek name for Erin. The poetic licence is not great." There are too many printers' blunders throughout the book, and possibly the quotation to some extent shares the misfortune, but even then the statement suggests grievous doubts, reaching far beyond its immediate bearings. At any rate, Mr. Clerigh works his way steadily through the jungle of tradition, presenting the substance of it and diligently commenting upon it with varying success. Where he differs from scholars like Sir John Rhys and Prof. Bury on their own ground, it is not easy to be hopeful for his contentions; and, when he quotes from St. Patrick's Confession that when Satan tempted him one night in his journey through the desert "it came home into my mind that I should call out Helias (*Heliam vocarem*), and in that moment I saw the sun rise in the heavens," and suggests that ἐλέεσον (*sic*) "is indicated by the context" as the right reading for "Heliam," one's confidence is again rudely shaken. Surely what is indicated by the context is obviously enough "Helion"—the Sun, the morning light—to dispel the darkness and to put Satan to flight. On the whole, we should be inclined to regard the traditional period of the work as an interesting collection and disposition of the salient materials and to leave the reader to interpret them for himself, taking Mr. Clerigh's explanations with critical caution. No doubt, however, much helpful discussion will remain after the winnowing out of weaknesses.

The coming of St. Patrick and the Patrician Documents afford scope for ingenious discussion, and the religion of the Gael before St. Patrick is reviewed in a long and interesting summary. On the Senchus Mor and the Tribal System Mr. Clerigh brings to bear his professional training and experience, though on the latter subject he recognizes the elaborate and careful studies of Dr. Seebohm. The invasion of the Northmen, if invasion it can be called (for their raids seldom went far inland), he summarizes from the Annals (795–1014): the most serious part of the raids, in spite of much outrage, was the taking of captives. The deeds of Brian Boru are recounted and assessed: Mr. Clerigh judges that he was neither a patriot statesman nor an ambitious usurper, but "a tribal chieftain fighting for tribal ascendancy, nothing more or less," and "this was the weakness of his position and the cause of his failure." Though he puts in a good word for Maelseachlainn, he says: "Unfortunately for Erin, the chieftains were warriors rather than statesmen, and, fighting amongst themselves, they left to the future historian the melancholy duty of recording how a nation of brave men surrendered their liberty without ever fighting with their whole strength one pitched battle in its defence." Of course, "the tribalism and political incapacity of the chieftains must be held responsible" for this, then and later; and, though there are extenuating circumstances, these do not mend the mischief—probably an inevitable mischief in historical evolution. The remainder of the volume is mainly occupied with the organization of the Church, the spreading of the teaching of the Church in Scotland and in the north of England, and doctrinal and ceremonial controversies. It closes with the remarkable ecclesiastical-political transactions leading to the invasion of Ireland by Henry II. The latter, the more strictly historical, half of the volume is characterized by industrious inquiry and independent judgment. If Mr. Clerigh dispels some popular illusions of his countrymen, he yet "conveys lessons of high political import which they may take hopefully to heart." "The early history of Ireland is a story of arrested evolution": what of the later history?

Life in the Sea.

Conditions of Life in the Sea. By James Johnstone, Fisheries Laboratory, University of Liverpool. (9s. net. Cambridge University Press.)

This is a new volume of the "Cambridge Biological Series." Its purpose is to present a short account of the main results of quantitative marine biological investigations, and of the related results of hydrography and oceanography. The jaw-breaking terms need not discourage a closer acquaintance, for the treatment is remarkably simple, and the materials teem with interest. Part I. is quite elementary: it explains the methods and the apparatus applied in the exploration of the sea; describes the form and the deposits of the floor of the North-Western Ocean, and the physical characters and the circulation of the sea water; reviews marine organisms and their life history; and treats of the methods, conditions, and economics of the sea fisheries. Let Mr. Johnstone speak of one of the three categories of organisms found in the sea:

> The mariner, it has been said, when he sails over a tract of sea, thinks that he traverses a "barren waste of waters" through which there swims here and there an occasional fish or porpoise. But in reality he sails over a "pasture," and beneath his ship is a wealth of life much more abundant than is contained in the richest or most luxuriant forest. Beneath his feet may be a couple of miles of water, and every cupful of this may teem with life, and this is so even if no fishes or other large animals may be visible. This enormously abundant life is the plankton, the drifting fauna and flora of the sea, the presence of which is only revealed by the tow-net and the microscope. Of all the forms of marine biological investigation the study of the plankton is the most entertaining. Equipped with the tow-net and the microscope, the naturalist finds here a veritable "wonderland" awaiting him, and the variety and beauty of the creatures so obtained, and the ever present possibilities of finding forms of life new to science, combine to make the study of the plankton a most fascinating one. To any one who lives near the sea the observation of the microscopic life may be a continual occupation and delight. But, in addition, no department of biology presents more abstruse problems to those who care for such investigation.

This First Part is a very simple, lucid, and interesting description of judiciously selected points, the sum of which is calculated to convey a good general idea of the subject on the lines indicated.

In Part II. the author attacks his main thesis—the methods and results of quantitative marine biological research. Marine biology is one of the last of the sciences to adopt quantitative methods, and the reason is simply that "an enormous mass of descriptive work had to be done before the exact methods of physical and mathematical science could be applied to the solution of problems of a general nature in marine biology." Mr. Johnstone describes Hensen's methods and apparatus and considers objections that have been made to the validity of his conclusions. He then investigates the distribution of the plankton and takes a general "census of the sea," having due regard to the fact that the imperfect methods and data can give only rough approximations. The inquiry into the productivity of the sea at different depths and in different latitudes includes, with much other matter of extreme interest, considerations bearing directly upon controverted practical questions in connexion with the sea fisheries. It needs but little reflection to realize the difficulty of reaching solid general conclusions of wide reach. "One stands," says Kjellmann, "as before an insoluble problem when one makes a haul with a tow-net in the Arctic and obtains abundant and strong vegetation, and this at a time when the sea is covered with ice, the temperature is extremely low, and nocturnal gloom predominates even at noon."

Part III. deals with the general conditions of life in the sea—the conditions of nutrition of marine organisms and the effect of changes in physical surroundings upon the nature and intensity of the processes, the multifarious and ubiquitous bacteria, their kinds, distribution, and operation, and the circulation of nitrogen. Special points are treated in appendixes.

There are, of course, multitudes of memoirs and articles on this subject, less or more inaccessible; but this work, we take it, is the only adequate introductory English summary of the researches. It is thoroughly well informed, deliberately and judiciously selective, and written in plain and clear style, so that laymen can have no difficulty in following the exposition of the marvellous facts.

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GENERAL NOTICES.

CLASSICS.

Latin Prose Composition. By W. R. Hardie, M.A., Professor of Humanity in the University of Edinburgh, formerly Fellow of Balliol College, Oxford. (4s. 6d. net. Edward Arnold.)

The First Part consists of notes on grammar, style, and idiom, of a more advanced character, partly to obviate common errors, partly to formulate afresh various matters on which there is essentially common agreement. The object is to rise above mere syntactical rules to literary qualities of composition. To this end the points are judiciously selected, and illustrated and enforced with abundant knowledge and skill. The Second Part consists of passages for translation in wide variety both of subject and of difficulty—315 in all. The volume impresses one as the outcome of a long process of observation and selection by a proved scholar and teacher. It will be extremely useful in the higher classical forms.

Cicero: Philippic Orations I., II., III., V., VII. Edited by John R. King. Second edition, revised by A. C. Clark, Fellow of Queen's College, Oxford. (3s. 6d. Clarendon Press.)

Mr. King's second edition is now some thirty years old, but it was a very good book, and Mr. Clark, while adding his own critical foot-notes, reproduces substantially the original introductions and notes, with minor omissions, changes, and additions. The five orations here selected are the more important of the series: "they are of especial value not only as bringing out more strongly Cicero's power as an orator and his importance in the State during the most honourable portion of his life, but also as illustrating a period of history concerning which we have but little contemporary information." The volume is edited with the greatest care and ability, and will be very valuable in schools.

Aeschylus in English Verse. Part III.: *Agamemnon, Choëphoroe, Eumenides.* By Arthur S. Way, D.Lit. (3s. 6d. net. Macmillan.)

Dr Way now brings his rendering of Aeschylus to a triumphant conclusion. His mannerisms, inversions, metrical licences, and embroideries are swept away in the tide of poetical transmutation. We could have wished a more rugged strength—warts and all; but still, here is a substantial Aeschylus for the English reader, and it is a great achievement both of scholarship and of literature.

MATHEMATICS.

A School Arithmetic. By H. S. Hall, M.A., and F. H. Stevens, M.A. (4s. 6d. Macmillan.)

In drawing attention to the production of a new school text-book by authors so well known in the educational world as Messrs. Hall and Stevens, it is needless to dwell at length on the fact that the latest volume appears to maintain fully the standard of general excellence which marks the authors' previous works. A few notes on the constitution of the "School Arithmetic," will, however, be serviceable to teachers and students. Algebra in its character of *general* arithmetic plays a distinct part in the text and, further, pupils are taught by its means the first principles of graphical work. The order of the contents also deserves notice. No rigid course can be laid down as suitable for the purposes of all teachers or the needs of all pupils. In view of this, the plan adopted by the writers has been to group together as far as possible allied portions of the subject under consideration, and thus it becomes easy for the reader to find all that the work contains on any special topic and to link together the parts of the science in any desired order. The authors have, perhaps, devoted more than usual attention to the question of decimal approximation, and a decidedly modern feature of the book is observable in the introduction into such a work of a consideration of four-figure logarithms. These are thoroughly explained, and skill in the use of them is provided for by the furnishing both of tables and of unworked exercises. The text-book has been issued in various forms: thus not only can it be obtained complete, either with or without answers, but also Parts I. and II. have been similarly published separately.

Constructions in Practical Geometry. By Rev. H. F. Westlake, B.A. Oxon. (1s. Philip.)

From this little work candidates for various College Preliminary and School examinations may select suitable practical courses in practical geometrical work, or they may adopt the more useful plan of making a careful study of the complete set of problems contained in the volume. In nearly every case the constructive portion of the solution is all that is given, and we consider that the author would have done well to urge *as an essential* that the proof be invariably furnished by either teacher or student, whereas he only suggests that pupils may with advantage be required to supply the demonstrations. In some instances the methods employed (those of the ordinary text-book on the subject) are capable of being improved by greater precision. One other point invites comment, namely, that in the discussion of a locus the text merely shows that points situated on it satisfy the given conditions, whilst the equally important task of proving that *only* such points fulfil the requirements is ignored. The compilation is nevertheless a thoroughly useful one, and affords in compact form a large amount of most valuable instruction.

SCIENCE.

Modern Electrical Theory. By Norman Robert Campbell, M.A., Fellow of Trinity College, Cambridge. (7s. 6d. net. Cambridge University Press.)

Mr. Campbell's volume makes a most useful addition to the "Cambridge Physical Series." The purpose of it is "to expound the subject in its logical order, to analyse the arguments by which the various phenomena are correlated, to draw special attention to the assumptions that are made, and to show which of these assumptions are fundamental in the modern theory of electricity and which may be expected to be abandoned in the further progress of investigation." The selection of material has been determined not by the intrinsic importance of the subjects or by the interest of the accessory studies with which they are connected, but by the light they throw upon the central problem—the relation of electricity and matter. Mathematical analysis is involved only when and so far as it is necessary in order to show the nature of the argument. Mr. Campbell started with the idea of providing a much needed text-book "from which students well grounded in the elementary branches of physics might obtain some knowledge of the later developments," but as he proceeded he "departed from the original scheme" in the direction both of simplicity and of difficulty. This wavering of purpose, however, does not really matter, at any rate for keen students of the subject, who will follow Mr. Campbell's lucid exposition and stimulating discussions with intense interest and with great profit.

Electricity, Present and Future. By Lucien Poincaré, one of the Inspectors-General of Public Instruction in France. Translated by Jasper Kemmis. (7s 6d. net. Sisley.)

The volume is devoted to the investigation of certain matters that were purposely omitted from M. Poincaré's well known work, "La Physique Moderne"—the different methods of the production and utilization of electric energy, and the numerous applications of it within the sphere of electrotechnology. It is not intended for experts alone, nor yet for mere beginners; the author's purpose is rather to address himself to "that intelligent class, so widespread nowadays, which takes a genuine interest in the advance of modern science, and to place before it as accurate a picture as possible of the existing condition of electricity." He lays "special emphasis on the practical outcome, in a general way, of the skill which investigators have displayed in drawing their conclusions from the principles"; and he insists on the importance of close touch between pure scientists and engineers, so that the one class may know well what the other class is doing. "Within the past few years," he says, "the use of electric energy has transformed our methods of lighting, our means of transportation, and our chemical industries; the telegraph and the telephone have entirely altered the conditions of everyday life; the discoveries in radiography and high-frequency have brought about far-reaching changes in the medical world; while, in another direction, it is common knowledge that the study of radioactive bodies has led physicists to form daring theories of the composition of matter and of the laws of mechanics." With all these developments M. Poincaré deals in a lucid and popular manner—popular within the limits indicated. The volume will foster an intelligent interest in the subjects treated.

MODERN LANGUAGES.

A German Reader and Theme-Book. By Calvin Thomas, Professor in Columbia University, and William Addison Harvey, Instructor in Columbia University. (4s. 6d. George Bell.)

The authors furnish about sixty selected passages in prose and verse, largely varied, and on the whole fairly representative in point of style and of difficulty. A considerable number of serviceable notes are given; and carefully constructed questions and themes based on the selected passages are appended. There is also an English Word-List, and a very full vocabulary. The volume is designed for students that "have advanced far enough in the study of the language to be ready for the reading of simple literature"; and the matter has been arranged with careful reference to interest, variety, and proper gradation. A very comprehensive and useful work.

A Second Course in Colloquial French. By Albert Thouaille, M. ès A. (2s. 6d. Blackie.)

The volume presupposes the author's "First Course," or else some similar systematic course in spoken French, with the essentials of accidence. Sixty-six lessons are devoted to "scenes of every day life described in simple language, with questions, and conversational and reading exercises," and are supplemented with a synopsis of grammar and a vocabulary. The work is constructed with rigid regard to the colloquial use of everyday French. It has obviously involved immense labour and care, and it is excellently adapted to its purpose. There are six illustrations.

Pedro Sánchez. By D. José M. de Pereda. Edited by Ralph Emerson Bassett, Associate Professor of Romance Languages, University of Kansas. (4s. 6d. Ginn.)

The text follows the author's standard Madrid edition, but omits many digressions and lesser episodes, without substantial harm to "the essential character of the main narrative as a specimen of modern Spanish realism in its most classical spirit, and as a reflection of Spanish politics, unique in its impressiveness, from the middle of last century."

The narrative centres in the revolution of 1854, of which Pereda was a spectator while a student at Madrid; and the work ranks as one of the author's most finished productions. The introduction treats very fully of Pereda and his work, and sketches the historical situation. The notes are adequate and generally helpful, and a very careful and complete vocabulary is appended. The volume will be most useful and agreeable to students of Spanish and of Spain.

"Heath's Modern Language Series."—(1) *El Trovador*, por Antonio Garcia Gutiérrez, edited by H. H. Vaughan, Ph.D., Instructor in the University of Michigan. (1s. 6d.) (2) *Lo Positivo*, por Tamayo y Baus, edited by Philip Harry and Alfonso de Salvio, Instructors in Romance Language, North-Western University. (1s. 6d.) (3) *Spanish Composition*, compiled and edited by Alfred Remy, Instructor in Modern Languages in the Commercial High School, Brooklyn. (1s. 6d.) (Harrap.)

Both (1) and (2) have short biographical introductions, brief notes, and full vocabularies. Perhaps the notes might have been extended with advantage, but they will be helpful so far as they go. Both plays are interesting and distinctive examples of the modern Spanish drama. (3) furnishes carefully chosen English passages, dealing exclusively with Spain and Spanish life, customs, and institutions, for translation into Spanish. It is intended for students that have already had practice in easy translation and retranslation. All the three volumes will be very serviceable both in the schoolroom and in private study.

ENGLISH LITERATURE.

"The Cambridge English Classics."—(1) and (2) *The Works of Francis Beaumont and John Fletcher*, Vols. V. and VI. (3) *The Complete Works of George Gascoigne*, Vol. I. (4) *Samuel Butler: Characters and Passages from Note-Books*. (4s. 6d. net each volume. Cambridge University Press.)

(1) and (2). Each of the new volumes of Beaumont and Fletcher contains five plays, admirably edited by A. R. Waller, M.A. The text is printed from the folio of 1679, together with a complete record of the earlier variant readings from the folio of 1647 and from all the quartos. The edition will be an immense boon to the student of English dramatic literature. There will be four more volumes of text and one volume of explanatory notes, glossary, and other material useful alike to the student and to the general reader. (3) The first Gascoigne volume contains *The Posies*, edited by John W. Cunliffe, M.A., D.Lit.Lond., Professor of English in the University of Wisconsin, as "corrected, perfected, and augmented by the Authour, 1575." The posies are of "Flowers," "Hearbes," and "Weedes," with various alternate pieces—"the delectable history of sundry adventures passed by Dan Bartholomew of Bathe," "The Fruites of Warre" (*Dulce Bellum inexpertis*), two dramatic works ("Supposes" and "Jocasta"), "The Pleasant Fable of Ferdinando Jeronimi and Leonora de Valasco"; and there are added "Certayne Notes of Instruction concerning the Making of Verse." The matter is most varied and often curious; and wide scope is afforded for both literary and linguistic study. The variants are laboriously collected in appendix. Another volume will be needed for the rest of Gascoigne's works. (4) The larger portion of Butler's "Characters" is a reprint from Thyer—somewhat less than half the present volume; the rest of the "Characters" and the whole of the "Miscel aneous and Reflections on various Subjects" are now printed for the first time from the British Museum MSS. Mr. Waller acknowledges substantial assistance from Miss Edith J. Morley, to whom "is due the sole credit for the very laborious work of having transcribed from, and first collated with, the MS. these further 'Characters' and the passages from Butler's notebooks, and for having thereby materially assisted in the production of a complete text of Butler's works"; and to Mr. George Brown for the further checking of the transcript and the proofs with the original MS., &c. The matter is incisive and quaint and remarkably varied. The critical notes in append x are not very numerous, but they are carefully compiled. All these volumes are very valuable additions to the admirable series.

Modern Studies. By Oliver Elton, Professor of English Literature in the University of Liverpool. (7s. 6d. net. Edward Arnold.)

The volume contains about a dozen articles reprinted from different reviews and journals with numerous alterations and additions. The scope is wide and of varied interest, and the treatment of each subject is substantial and capable. "Literary History," "Literary Fame," and "A Word on Mysticism" are among the more comprehensive themes. "Giordano Bruno in England" connects English and Continental literature, and establishes a relation with succeeding articles on Spenser and Shakespeare, the latter of which, however, is specifically concerned with four recent critics—Brandes, Bradley, Churton Collins, and Raleigh. The others treat of Tennyson, Swinburne, Meredith, Henry James, and "Living Irish Literature" The criticism is well informed and discriminating, with much collateral illumination and independent judgment. The whole volume is most interesting and suggestive.

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(*Continued on page* 32.)

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anthologies appealing to Great and Greater Britain. Its purpose is "to stimulate and foster the emotions which are bound up with the love of our country"—to "indicate the sources which nourish and ennoble our national life." The compilers wisely take care to illustrate not merely the active and heroic side of patriotism, but also "the feeling, suffering, non-combative element, which, alike in the contemplative and the work-aday world, concerns all women and children and many men—those who are never called upon to risk their lives on any field, whether of war or of industry." The poems are carefully and suggestively classified, and the collection is enriched by an unusual number of copyright pieces of great interest and merit. The task of selection has been very arduous, but it has been guided by the right spirit, so that the results are admirable. The work ought to be, and is sure to be, a great success.

A Treasury of Verse for School and Home, selected and arranged by M. G. Edgar, M.A., in four handy Parts (1s. each, Harrap), contains many copyright pieces as well as old favourites, and is clearly printed and strongly bound.—*A Treasury of Ballads*, selected and arranged by M. G. Edgar, M.A., and published by Messrs. Harrap, is an attractive companion volume.

Messrs. Macmillan include in their excellent series of "English Literature for Schools," *A Book of Poetry illustrative of English History*, Part III., *The Hanoverian Dynasty*, edited by G. Dowse, B.A., Assistant Master at Preston Grammar School (9d.). The same house issues *The Boy's Book of Poetry* in three Parts: (1) Junior, (2) Intermediate, (3) Senior (4d. each). The pieces (many of them copyright) are well chosen and judiciously graded.

Poetry for Upper Classes, selected and arranged by Edmund Arthur Helps, formerly one of H.M.'s Inspectors of Schools (1s. 6d., George Bell), is a comprehensive and varied collection excellently adapted to its purpose. A considerable amount of useful annotation is appended. The book is beautifully printed and strongly bound in limp cloth.

HISTORY.

Marie de Médicis and the Court of France in the Seventeenth Century. By Louis Battifol. Translated by Mary King and edited by H. W. C. Davis, Fellow of Balliol College, Oxford. (7s. 6d. net. Chatto & Windus.)

M. Battifol "aims at presenting the picture of a French Queen surrounded by her court between the years 1600 and 1617, when Marie de Médicis was Queen and Queen-Regent—a period of particular interest, because one in which a new dynasty, but recently emerged from the throes of civil war, had not yet suffered the fate which buries the individuality of princes beneath the artificiality of courts and courtly etiquette." The interest of the work, then, lies partly in the depiction of real social conditions of much historical interest, but, to a large extent, also in a fresh examination of the relations of the Government and the administration. "Amidst all the troubles and disorders of the sixteenth century the administrative machine proper remained all-powerful with its spirit of narrow regulation, its tendency towards formalism, and meticulous and peremptory 'functionalism'"; so that "the throne in France in the early seventeenth century was so far from wielding the absolute power claimed for it by contemporary jurists as to be circumscribed on all sides by a series of passive forces, more masters of the State indeed than the King's self, and invoking principles of immemorial usage and the 'fundamental laws of the realm.'" The volume is a laborious and interesting contribution to the historical reconstruction of the period. There is a collotype portrait frontispiece reproduced from the contemporary copper-plate in the British Museum.

A cheaper reissue of *The Development of the European Nations*, 1870–1900, by J. Rose Holland, Litt.D. (7s. 6d. net, Constable) will be very welcome to students of modern history. It deals pretty fully with the great movements and events of a generation that immediately influences the present time, but that is too near to us to receive anything like adequate attention in school histories. The treatment is mainly limited, as the title indicates, to "events which had a definitely formative influence on the development of European States," but the limitation is not pedantically strict. Generally refraining from "expressing a decided verdict" on questions of motive and policy, Dr. Holland has not hesitated "to pronounce a judgment on these questions." Necessarily; but he is much more at home in the marshalling of facts: the Central Asian question, for example, needs large reconsideration. The first half of the volume, occupied with France, Germany, and Russia, seems decidedly the better half. However, the handling generally is useful, even when provocative; and the work furnishes a convenient survey of a very important period from a very practical standpoint. There are sixteen serviceable maps and plans.

MISCELLANEOUS.

Hazell's Annual, edited by William Palmer (3s. 6d. net, Hazell, Watson, & Viney), continues to justify its claim to be indispensable. Whatever the topics—political, economic, educational, artistic, scientific, foreign, or domestic, &c.—the reader is sure to find the kernel of the best and latest information. The volume has been seriously revised and rewritten to bring it into accord with the changing needs of the time, many new articles introducing subjects that have come to the front since the preceding issue. The biographical section has been very usefully extended in the way of giving details of foreign persons of importance that are not readily to be found elsewhere in English books of reference.

Sport and Athletics in 1908 (5s. net, Chapman & Hall) is a most comprehensive register of "the results for the year 1908 (to November) of all the important events in athletics, games, and every form of sport in the United Kingdom, together with the winners, records, and notable achievements of past years, also a full list of results in the Olympic Games." No doubt it may fairly claim to be the standard reference work in its sphere.

The first volume of *The Country Home* (5s. net, Constable) makes a handsome record of articles and illustrations of great interest and of practical value. Houses, gardens, fields are surveyed from the practical as well as the artistic point of view; and attention is given to natural history, rural industries, and country customs. The scope is comprehensive, and the execution in detail is instructive and agreeable.

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Tales from Spenser, by R. W. Grace, Head Master of Lindisfarne College, Westcliffe-on-Sea (5s., Fisher Unwin), is one of the most charming books of the season. It retells the story of the Red Cross Knight in simple and direct language, and impresses that the days of chivalry are not yet past, though the battle ground is changed. Twelve illustrations by Helen S. Kück.

Mr. Fisher Unwin offers a number of series to choose from, and one is bound to make an agreeable choice. There is a pleasant series of "Bible Stories for Children" (with other publishers' names on the title-page: Alf Cooke, Ltd., London, and Frederick A. Stokes Co., New York): for example, *Ruth and Esther* and *David and Jonathan*, both written by W. Mord and illustrated (a dozen coloured illustrations in each) by E. North (1s. each). Then there is the "Dutch Series," represented by *Betty's Holiday* (1s.), *Lazy Peter* (6d.), and *Why Mina was Glad* (6d.), all by H. M. Howie. Also the "Nursery Series": for example, *Penelope's Escape*, by Grete Hahn (1s.), *Mother's Birthday*, by Eric Stowell (6d.), and *The Doings of Awdrey*, by J. C. D. Boyd (6d.). The "Willie Wimple Series": *The Magic Forge* (1s.) and *The Bear beneath the Stairs* (6d.), both by John Lea. The "Bird Series": *Bird Twitterings*, by Alton Towers (1s.), and *Baby Blossom at the Farm* and *Grandfather Seagull* (6d. each), both by M. F. Howie. The "Arabian Series": *Persian Tales* (2s. 6d.), *The Foolish Tailor* and *The Golden Bowl* (1s. each), all by W. Mord. The "Cartone Series": *Bible Pictures*—twelve full-page illustrations in colour by F. Elphick, mounted on strong cardboard (2s. 6d.). In all these series the letterpress—prose and verse—is suitable for children; and the get-up is attractive. Each of the shilling books has eight, and each of the sixpenny books has four, full-page coloured illustrations and numerous black-and-white drawings.

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(Continued on page 34.)

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Cambridge University: 1) Higher Local Examinations. Fortieth Annual Report of the Syndicate. 1908. 6d. (2) Regulations for July and December, 1909. (3) Schedules for Scientific Subjects. Cambridge University Press.

Chile, Anales de la Universidad de. May–December, 1908.

City and Guilds of London Institute: Department of Technology. Report for Session 1907–8. John Murray.

[Careful, adequate, and progressive.]

Columbia University. Report, 1908.

English Association. Leaflet No. 8: Types of English Curricula in Girls' Secondary Schools.

Johns Hopkins University Circular, No. 8, 1908.

Kelsey, F. W., Various Papers by. (1) Is there a Science of Classical Philology? (reprinted from *Classical Philology*, October, 1908. (2) Some Archæological Forgeries from Michigan (reprinted from the *American Anthropologist*, March, 1908.) (3) Codrus's Chiron and a Painting from Herculaneum (reprinted from the *American Journal of Archæology*, 1908).

Literature, A Plea for. By S. E. Dawson, C.M.G., Lit.D. Presidential Address to the Royal Society of Canada.

Newcastle-upon-Tyne Education Committee. Report January, 1906—July, 1908.

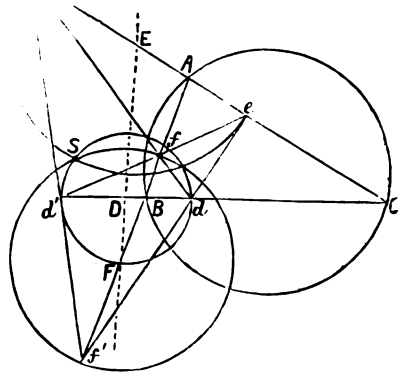
North Wales, University College of. Calendar for 1908–9.

MATHEMATICS.

16522. (S. NARAYANA AIYAR.)—S is a variable point on the circumcircle of a fixed triangle ABC. For different positions of the point S four systems of conics can be described circumscribing the triangle ABC with S as focus. Show that the directrices of each system of these conics are concurrent and that the points of concurrence are the in- and ex-centres of the triangle ABC.

[N.B.—The Proposer's question was sent in prior to the publication of the Note by Mr. Davis to which the solver refers.—ED.]

Solution by C. E. YOUNGMAN, M.A.



This has been very simply proved in a note by Mr. R. F. Davis (see *Educational Times*, March, 1908). Generalizing a little, take S any point in the plane; draw DEF the radical axis of S and the circle ABC, cutting the sides at D, E, F; and, with these points as centres, draw circles through S, giving dd', ee', ff'. They cut ABC orthogonally, therefore dd' are harmonic conjugates between B and C; therefore Sd, Sd' bisect the angles BSC, and divide BC in the ratio BS : SC. Hence $d'ef$, $de'f$, def', $d'e'f'$ are the four directrices corresponding to the focus S for conics ABC; and they make a quadrilateral having ABC for diagonal triangle. Now, any conic touching these four lines has director-circle coaxal with (D), (E), (F), and therefore passing through S and cutting ABC orthogonally; and if we fix one of these conics, we shall provide both a locus for S and an envelope for the directrices, and obtain the proposition: If the focus S of a conic ABC be made to describe a circle orthogonal to the circle ABC, the corresponding directrix will touch the conic which has that circle for director, and with respect to which ABC is a self-polar triangle.

In particular, when the circle shrinks to a point, that is, when S lies on the circle ABC, the directrices touch a rectangular hyperbola having S for centre: and the points of contact must be the in- and ex-centres of ABC; for if p, q, r stand for AS, BS, CS, the trilinear equations of $d'ef$, &c. are $pa\pm qb\beta\pm rc\gamma = 0$; but by Ptolemy's Theorem $pa = qb \pm rc$; therefore each directrix goes through one of the centres.

16543. (A. M. NESBITT, M.A.)—EF is a common tangent to two circles, ADBE and ADCF. CDB is drawn parallel to EF, and G is the harmonic conjugate of D with respect to BC. If the circles GDA and EDF cut in H, prove that DH is perpendicular to BC.

Solution by Dr. E. J. EDWARDES.

O, P, N are centres of circles GDA, DEF, CDF respectively; since DH is a common chord of the circles O, P, therefore DH is perpendicular to their central line PO. Produce FN to meet BC in K; PO meets HD in Z and FK in T; HD meets EF in L. Since in quadrilateral ZTFL the angles at Z and F are right angles, therefore $\angle L$ and $\angle ZTF$ are supplementary; also since DK is parallel to LF, therefore the angles at L and D are supplementary; therefore $\angle ZDK = \angle ZTF$; and therefore ZDKT is a cyclic quadrilateral, but the two opposite angles DKT and DZT are right angles; therefore also the angles ZDK and KTZ are right angles, and thus HD is perpendicular to BC.

16513. (The late R. W. D. CHRISTIE.)—Find an endless chain of integral solutions of $A^2 + B^2 = C^2$, where $A-B = a^2+b^2$, $C-A = a^2$, $C-B = 2d^2$, are all integers.

Solutions (I.) *by* Lt.-Col. ALLAN CUNNINGHAM, R.E.
(II.) *by* Professor SANJÂNA, M.A.

(I.) Numbering the equations

$A^2 + B^2 = C^2$, $A-B = a^2 \cdot b^2$, $C-A = a^2$, $C-B = 2d^2$...(1, 2, 3, 4).

Here (2), (3), (4) give $a^2 + b^2 = 2d^2 - a^2$, whence

$a^2 \quad d^2 - \frac{1}{2}b^2$ .....(5).

Or, $a^2 = d^2 - 2(\frac{1}{2}b)^2$, so that b must be even, and a, b, d must be of forms $a = \alpha^2 - 2\beta^2$, $\frac{1}{2}b = 2\alpha\beta$, $d = \alpha^2 + 2\beta^2$ .....(6).

Also, by (1), A, B, C must be of forms

$B = t^2 - u^2$, $A = 2tu$, $C = t^2 + u^2$ .....(7).

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Here α, β, t, u are connected by the relations (2), (3), (4) (equivalent to only two independent relations). Here (4) and (7) give

$$u = d \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(8).$$

Also (2) and (7) give $2tu - t^2 + u^2 = a^2 + b^2$, (3) and (7) give

$$t^2 + u^2 - 2tu = a^2,$$

whence $t^2 - 2tu = -\frac{1}{2}b^2$. Hence, by (8), $t^2 - 2tu + u^2 = d^2 - \frac{1}{2}b^2 = a^2$, by (5). Hence $t - u = \pm a$, $t = u \pm a = d = a$ .....(9).

Finally, a, b, d are given by (6), where α, β are arbitrary integers, and A, B, C are given by (7), wherein t, u are given by (8), (9).

[Rest in *Reprint*.]

11215, 15116, & 16397. (11215.) (Professor LEMOINE.)—Sur les perpendiculaires MA', MB', MC' abaissées d'un point M sur les côtés du triangle ABC on prend respectivement les points A'', B'', C'' tels que

$$MA'.MA'' = MB'.MB'' = MC'.MC'' = \rho^2.$$

Quel que soit ρ, le triangle A''B''C'' est perspectif avec ABC et le centre de perspective est sur l'hyperbole équilatère ABCM.

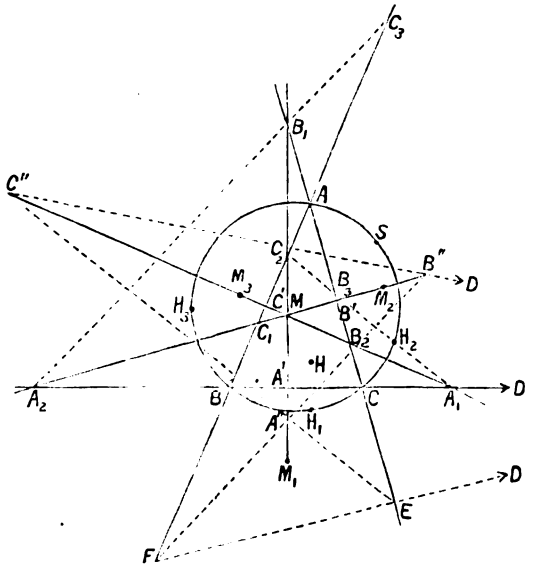
(15116.) (C. E. YOUNGMAN, M.A.)—If H be the orthocentre of ABC, and DEF any transversal, perpendiculars from A, B, C, H on HD, HE, HF, DEF will meet at P. If this be still true when H is simply a fixed point in the plane, find the locus of P and the envelope of DEF.

(16397.) (HENRY RIDDELL, M.E.)—If two parabolas touch the sides of a triangle, and with the intersection of their directrices as focus a third parabola be described, and a tangent to this curve cut the sides of the triangle. Then, if the focus of this third parabola be joined to the three intersections of the tangent with the sides of the triangle, and upon each of these joining lines perpendiculars be let fall from the vertex opposite the side concerned, these three perpendiculars will meet in a point, and the locus of this point is a circle.

Solution by C. E. YOUNGMAN, M.A.

Direct proofs of Question 11215 are given in the *Reprint*, Vol. XIII., pp. 67, 93, New Series; but the following, though long, may still be worth while, as it brings in wider connexions.

Let M_1, M_2, M_3 be the images of M in BC, CA, AB; and H_1, H_2, H_3 those of the orthocentre H; and let MM_1, ..., cut the sides of ABC at A', B_1, C_2; B', C_1, A_2; C', A_1, B_2, as in the figure. Then the points



A, M_2, M_3, B_2, C_1 are concyclic, for AM_2 and AM_3 both subtend at B_2 and C_1 the same angle $(90°-A)$ as AM; and, similarly, $BM_3M_1C_2A_1$ and $CM_1M_2A_2B_1$ are concyclic.

These three circles, with the lines H_1M_1, H_2M_2, H_3M_3 (the images of HM), all meet at a point on the circle ABC. For H_1 already lies on that circle; let H_1M_1 cut it again at S. Then $\angle SM_1C_2 = SH_1A = SBC_2$ or SCB_1; so that S lies on the circles BM_1C_2 and CM_1B_1. Similarly, H_2M_2 and the circles ABC, CM_1M_2, AM_2M_3 meet at a point, which must be S, as two of the circles are the same as before.

Since the projections of S on all six lines BC, CA, AB, B_2C_1, C_2A_1, A_2B_1 are collinear, S lies on the circum-circle of the triangle formed by any three of them; for instance, AB_2C_2 formed by AB, AC, and C_2A_1, and AB_1C_2 formed by AB, AC, and A_2B_1. Hence the figures $SCB_1B_2B_3$ and $SBC_2C_1C_2$ are directly similar, and any circle through AS will cut AC and AB at points which correspond to each other in these figures.

Let the like sides of ABC and A''B''C'' meet at D, E, F. Now C''A''C'A' are concyclic, and so are $C_2A_1C'A'$; therefore C''A'' is parallel to C_2A_1; and, similarly, A''B'' to A_2B_1. Therefore

$$B_1E : EB_2 = B_1A'' : A''C_2 = C_2F : FC_2;$$

therefore E and F correspond in the similar figures above, and the circle AEF goes through S.

In the same way BFDS and CDES are concyclic; hence DEF is a straight line, and therefore AA'', BB'', CC'' must meet at a point P. And, since the projection of S on DEF lies always on the pedal line of S, DEF envelopes a parabola with focus S inscribed in ABC.

M lies on the radical axis of any two of the circles DA'A'', DB'B'', DC'C''; therefore all three meet again at D' on DM, and

$$\text{the angle } B'D'M = B'B''D = \pi - B'C_1B_2 = \pi - B'AM$$

(since M is the orthocentre of AC_1B_2); therefore D' lies also on the circle AB'C'M. Hence both A''D and AM subtend a right angle at D'; consequently AA'' is perpendicular to MD, and the transversal DEF is such that perpendiculars from A, B, C on MD, ME, MF meet at P. The triangles MEF, MCB are in orthology, having A'' for one centre; and the other must be P; therefore MP is perpendicular to DEF.

Reciprocate from M; A, B, C become the sides of a triangle *abc*, DEF a point *p*, and P a transversal *def*; and these are still such that perpendiculars from *a*, *b*, *c* on *Md*, *Me*, *Mf* meet at *p*. Therefore the envelope of *def* is a parabola, and the locus of P is a conic—a rectangular hyperbola because A, B, C, H are all special positions of P. Since M also lies on this hyperbola, it has like properties with P: namely, perpendiculars from P on AM, BM, CM will cut BC, CA, AB on a line perpendicular to MP.

The focus in Question 16397, lying on the directrices of two inscribed parabolas, must be H. Now when M is placed at H, by "continuity" there will still be transversals DEF with corresponding P's; but, since S is indeterminate, they are now free of restriction, except that P will be the reciprocal of DEF with respect to the polar circle of ABC. Accordingly, when DEF is made to touch any conic with focus H (not only a parabola), P will describe a circle.

16497. (Major C. H. CHEPMELL, (late) R.A.)—The special roots of the cyclotomic equation $x^{21} - 1 = 0$ are given by the sextic

$$y^6 - y^5 - 6y^4 + 6y^3 + 8y^2 - 8y + 1 = 0 \quad (y = x + 1/x),$$

and this can be resolved into two cubics

$$2y^3 - y^2 - y - 5 \pm \sqrt{(21)}\,(y^2 - y - 1) = 0.$$

Resolve the sextic into three quadratics, the coefficients of which depend on ω, $1/(1-\omega)$, $(\omega-1)/\omega$, the three roots of $\omega^3 + \omega^2 - 2\omega - 1 = 0$ the 7-cyclotomic equation.

Remarks by Professor SANJÁNA, M.A.

The special roots of $x^{21} - 1 = 0$ are readily obtained by the usual algebraic process. We have to equate to zero

$$[(x^{21}-1)/(x^7-1)]/[(x^3-1)/(x-1)] = (x^{14} + x^7 + 1)\,(x^2 + x + 1)$$
$$= x^{12} - x^{11} + x^9 - x^8 + x^6 - x^4 + x^3 - x + 1;$$

hence, dividing by x^6 and putting $x + 1/x = y$, we get

$$y^6 - y^5 - 6y^4 + 6y^3 + 8y^2 - 8y + 1 = 0.$$

And we can shew without much difficulty that the expression on the left side is equal to the product of the two cubics or the three quadratics indicated in the Question, barring certain numerical common factors. But the great difficulty is to obtain the factorization of the sextic. In such cases I have employed a trigonometrical method: see my paper in *Proc. of Edin. Math. Soc.*, Vol. XXVI.

In the present instance,

$$(x^{14} + x^7 + 1)/(x^2 + x + 1) = (x^{14} - 2x^7 \cos \tfrac{4}{3}\pi + 1)/(x^2 - 2x \cos \tfrac{2}{3}\pi + 1)$$
$$= \Pi\,(x^2 - 2x \cos \tfrac{1}{21}k\pi + 1), \quad \text{where } k = 20, 26, 32, 38, 44, 50;$$
$$= x^6 \Pi\,(y + 2\cos k'\alpha), \quad \text{where } \alpha = \tfrac{1}{21}\pi \text{ and } k' = 1, 5, 11, 13, 17, 19.$$

It will be found that

$$(y + 2\cos\alpha)(y + 2\cos 5\alpha)(y + 2\cos 11\alpha)$$
$$= y^3 + \tfrac{1}{2}y^2\,[\sqrt{(21)} - 1] - \tfrac{1}{2}y\,[\sqrt{(21)} + 1] - \tfrac{1}{2}\,[\sqrt{(21)} + 5]$$
$$= y^3 - \tfrac{1}{2}y^2 - \tfrac{1}{2}y - \tfrac{5}{2} + \tfrac{1}{2}\sqrt{(21)}\,(y^2 - y - 1);$$

and that

$$(y + 2\cos 11\alpha)(y + 2\cos 13\alpha)(y + 2\cos 19\alpha)$$
$$= y^3 - \tfrac{1}{2}y^2 - \tfrac{1}{2}y - \tfrac{5}{2} - \tfrac{1}{2}\sqrt{(21)}(y^2 - y - 1).$$

Thus the first result is at once obtained.

To obtain the resolution into quadratics, take the products

$$(y + 2\cos\alpha)(y + 2\cos 13\alpha), \quad (y + 2\cos 5\alpha)(y + 2\cos 19\alpha),$$
$$(y + 2\cos 11\alpha)(y + 2\cos 17\alpha);$$

these will be respectively found to be

$$y^2 - 2y\cos\tfrac{5}{7}\pi + 4\cos^2\tfrac{5}{7}\pi - 3, \quad y^2 - 2y\cos\tfrac{3}{7}\pi + 4\cos^2\tfrac{3}{7}\pi - 3,$$
$$y^2 - 2y\cos\tfrac{1}{7}\pi + 4\cos^2\tfrac{1}{7}\pi - 3.$$

Thus each quadratic factor is of form $y^2 + \omega y + \omega^2 - 3$, where ω is one root of the cyclotomic equation $z^3 + z^2 - 2z - 1 = 0$ corresponding to $x^7 - 1$. It would therefore be simpler to say that the quadratic factors involve ω and ω^2 respectively. Of course ω_2 and ω_2^2, and ω_3 and ω_3^2 may be expressed in terms of ω_1, $-1/(1+\omega_1)$, $-(\omega_1+1)/\omega_1$, the three roots expressed in terms of any one root.

[For the Proposer's very full Solution, see *Reprint*.]

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About the Absolute Limits of Series of Positive Terms.

By F. TAVANI.

If $a_n < a_{n+1}$, we have the relation

$$1/a_n > \frac{(1/a_n - 1/a_{n+1})}{\log(a_{n+1}/a_n)} > 1/a_{n+1} \quad \ldots\ldots (1),$$

which is obtained by calculating the integral of the relation

$$1/a_n > \int_n^{n+1} e^{-\log a_n - (x-n)(\log a_{n+1} - a_n)}\, dx > 1/a_{n+1},$$

which is obviously true.

Therefore, if P and M represent respectively the absolute minimum and the absolute maximum of the set $[\log(a_{n+1}/a_n)]_{n=1}^{n=\infty}$, when these limits exist we have

$$\sum_{n=1}^{\infty} 1/a_n^{\rho} > 1/a_1^{\rho} M_{\rho},$$

ρ being the exponent of convergence of the series.

$$\sum_{2}^{\infty} 1/a_n^{\rho} < 1/a_1^{\rho} P_{\rho} \quad \text{or} \quad \sum_{1}^{\infty} 1/a_n^{\rho} < 1/a_1^{\rho}(1 + 1/P_{\rho}),$$

$$1/a_1^{\rho}(1 + 1/P_{\rho}) > \sum_{1}^{\infty} 1/a_n^{\rho} > 1/a_1^{\rho} M_{\rho} \quad \ldots\ldots (2).$$

These relations are applicable to all series having either P or M or both, and may be used for transforming the series into expressions of finite form.

In fact, (2) may be written

$$(1 + 1/P_{\rho}) > 1 + \sum_{2}^{\infty} a_1^{\rho}/a_n^{\rho} > 1/M_{\rho}.$$

Now $(1 + \sum_{2}^{\infty} a_1^{\rho}/a_n)$ is either $>$ or $<$ $1/M_{\rho} + 1$.

In the latter case we have

$$\sum_{1}^{\infty} 1/a_n^{\rho} = (1/M_{\rho} + \theta).\ (0 < \theta < 1).$$

In the first case we have

$$\sum_{1}^{\infty} 1/a_n^{\rho} = (1/\nu_{\rho} + 1),$$

where ν is a uniquely determined number between P and M, the existence of which is evident; its calculability forms a different question.

It is easy to prove also that, if $\sum_{1}^{\infty} 1/b_n > \sum_{1}^{\infty} 1/a_n$ and the low limit of the set $[\log b_{n+1}/b_n]_{\infty}^{1} > 0$, then both series admit an absolute superior limit and are both expressible under a finite form.

As obvious applications of the formulæ above we may add

$$\sum_{1}^{\infty} 1/n! < (1 + 1/\log 2); \quad (\sum_{2}^{\infty} 1/n^{2+\delta} + \sum_{2}^{\infty} 1/n^{3+\delta} + \ldots) < \sum_{2}^{\infty} 1/[n \log(n)^{1+\delta}];$$

$$\sum_{2}^{\infty} 1/a_n^{\rho} < 1/a_1^{\rho}, \text{ if } P \geqslant 1; \quad \sum_{2}^{\infty} 1/n^{1+\delta} < 1/\delta$$

the last relation being immediately obtained if we put $a_n = n^{\lambda}$ and $\rho = \kappa + 1$, and use

$$\int_1^{\infty} dn/[(n^{\lambda})^{\kappa+1}] > \sum_{2}^{\infty} 1/[(n^{\lambda})^{\kappa+1}] = 1/[\lambda(\kappa+1) - 1],$$

and, putting $\lambda(\kappa+1) - 1 = \delta$, the said relation is established.

I should like to call the attention in particular to relation (1): very general because it supposes only $a_{n+1} > a_n$, and very simple and susceptible of important applications; these mentioned here being all, except the last, simple consequences of (1).

16393. (SARADAKANTA GANGULI, M.A.)—Show that it is possible to find any number of integers such that the square of the greatest is equal to the sum of the squares of the rest. Hence, solve in integers $x_1^2 + x_2^2 + x_3^2 + x_4^2 = x_5^2$.

Additional solution by ARTEMAS MARTIN, LL.D.

In the well known identical equation

$$(x-y)^2 + 4xy = (x+y)^2 \quad \ldots\ldots (1)$$

it is obvious that x may have any value whatever; hence we may assume

$$x = z_1 + z_2 + z_3 + z_4 + \ldots + z_{n-1},$$

and then (1) becomes by substitution

$$(z_1 + z_2 + z_3 + z_4 + \ldots + z_{n-1} - y)^2 + 4y(z_1 + z_2 + z_3 + z_4 + \ldots + z_{n-1}) = (z_1 + z_2 + z_3 + z_4 + \ldots + z_{n-1} + y)^2.$$

Now, if we assume $y = b^2$ and $z_1 = a_1^2$, $z_2 = a_2^2$, $z_3 = a_3^2$, $\ldots z_{n-1} = a_{n-1}^2$, we will have

$$(a_1^2 + a_2^2 + a_3^2 + a_4^2 + \ldots + a_{n-1}^2 - b^2)^2 + (2ba_1)^2 + (2ba_2)^2 + (2ba_3)^2 + (2ba_4)^2 + \ldots + (2ba_{n-1})^2 = (a_1^2 + a_2^2 + a_3^2 + a_4^2 + \ldots + a_{n-1}^2 + b^2)^2,$$

or n integral square numbers whose sum is a square, where a_1, a_2, a_3, a_4 $\ldots$ a_{n-1} and b may have any integral values chosen at pleasure.

When $n = 4$, we have

$$(a_1^2 + a_2^2 + a_3^2 - b^2)^2 + (2a_1b)^2 + (2a_2b)^2 + (2a_3b)^2 = a_1^2 + a_2^2 + a_3^2 + b^2)^2.$$

Take $a_1 = 1$, $a_2 = 2$, $a_3 = 3$, $b = 2$; then, after dividing by 2^2,

$$2^2 + 4^2 + 5^2 + 6^2 = 9^2.$$

Take $a_1 = 1$, $a_2 = 2$, $a_3 = 3$, $b = 3$; then we have

$$5^2 + 6^2 + 12^2 + 18^2 = 23^2.$$

An innumerable number of sets of four squares may be found whose sum is a square.

16410. (H. L. TRACHTENBERG, B.A.)—Prove that the centres of a system of conicoids having a common curve of intersection lie on a line, provided that part of the common curve is a conic at infinity.

Solution by Professor NANSON.

If S is any one of the conicoids, the system is given by

$$S + \lambda(ax + by + cz + d) = 0.$$

Differentiating with respect to x, y, z, and eliminating λ from the three resulting equations, the locus of the centre is the straight line

$$\partial S/\partial x : \partial S/\partial y : \partial S/\partial z = a : b : c.$$

16516. (R. CHARTRES.)—P is a random point within the triangle ABC ($\Delta = 1$).

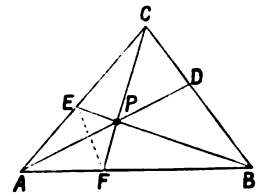
Show that the mean value of the area

$$AEF = \sum_{1}^{\infty} \frac{1}{n^2(n+1)^2},$$

and the mean of

$$DEF = \sum_{1}^{\infty} \frac{1}{n^3(n+1)^3},$$

without calculating their numerical values.



Solution by the PROPOSER.

Let the triangle APC $= x$, APB $= y$, $\Delta = 1$,

(1) $$M(AFE) = \int_0^1 \int_0^{1-x} \frac{x}{1-y} \frac{y}{1-x}\, dx\, dy \Big/ \int_0^1 \int_0^{1-x} dx\, dy$$

$$= 2\int_0^1 x \left\{ \frac{(1-x)}{2} + \frac{(1-x)^2}{3} + \ldots \right\} dx = 2\sum_{1}^{\infty} \frac{1}{(n+1)^2(n+2)}$$

$$= \sum_{1}^{\infty} \frac{1}{n^2(n+1)^2}.$$

(2) $$\sum_{1}^{\infty} \frac{1}{n^3(n+1)^3} = \sum_{1}^{\infty} \left(\frac{1}{n} - \frac{1}{n+1} \right)^3 = 1 - 3\sum_{1}^{\infty} \frac{1}{n^2(n+1)^2} = 1 - 3M(AFE)$$

$$= M(EFD).$$

(3) $M(AFE^n)$ [see Question 15993]

$$= \frac{n^2\pi^2}{3} - 2n^2\left(\frac{1}{1^2} + \frac{1}{2^2} + \ldots + \frac{1}{n^2} \right) - (2n-1).$$

16461. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Factorize completely (into prime factors) $N = (19^{24} + 1)$.

Solution by the PROPOSER.

$$N = (19^{24} + 1) = (19^8 + 1)(19^{16} - 19^8 + 1) = N_1 N_2 \text{ (suppose)}.$$

Here $N_1 = (19^8 + 1) = 2.15073.563377$;

$N_2 = 288,441,413,550,637,604,641,$

$= 241.577.1009.4657.14929.29569.$

These divisors are found from two Tables of Solutions (y_8, y_{12}) of the two congruences $y_8^4 + 1 \equiv 0$, $(y_{12}^{12} + 1)/(y_{12}^4 + 1) = 0$, (mod p), compiled by the author; these are now complete up to $p \not> 32000$, and therefore suffice for the above work.

QUESTIONS FOR SOLUTION.

16566. (T. K. VENKATARAMAN, M.A.)—Integrate

$$\int \frac{z\sqrt{[5a^2 + 2z\sqrt{(a^2 - z^2)}]}\, dz}{\sqrt{(a^2 - z^2)}}.$$

16567. (T. K. VENKATARAMAN, M.A.)—Solve the differential equation

$$dx/(5x + 10y + 5z + 4) = dy/(4x + 15y + 10z + 7) = dz/(-3x - 5y + 5z + 1)$$

and interpret the result geometrically.

16568. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Let

$$N_\nu = (x^5 \mp y^5)/(x \mp y), \quad N'_\nu = (x'^5 \mp y'^5)/(x' \mp y');$$

$$N_{\nu 1} = (\xi^6 + \eta^6)/(\xi^2 + \eta^2), \quad N'_{\nu 1} = (\xi'^6 + \eta'^6)/(\xi'^2 + \eta'^2).$$

Find a solution of some generality (in integers) of $N_\nu + N'_\nu = N_{\nu 1} + N'_{\nu 1}$, and find the lowest solution thereof.

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16569. (Professor SANJÁNA, M.A.)—For given values of θ, show how to determine a, b, c, a_1, b_1, c_1 so that the following relation may hold good :—$(a+a_1\sqrt{\theta})^{\frac{1}{3}}+(b+b_1\sqrt{\theta})^{\frac{1}{3}}=(c+c_1\sqrt{\theta})^{\frac{1}{3}}$.

[All symbols denote rational quantities and some of the square roots may have either sign. Examples :

$$\sqrt{(22+2\sqrt{13})}+\sqrt{(10+2\sqrt{13})}=\sqrt{(48+12\sqrt{13})},$$
$$\sqrt{(22-2\sqrt{13})}-\sqrt{(10-2\sqrt{13})}=\sqrt{(48-12\sqrt{13})};$$
$$\sqrt{(24+8\sqrt{7})}+\sqrt{(5+\sqrt{7})}=\sqrt{(45+17\sqrt{7})},$$
$$\sqrt{(24-8\sqrt{7})}-\sqrt{(5-\sqrt{7})}=\sqrt{(45-17\sqrt{7})}.]$$

16570. (R. F. DAVIS, M.A.)—Factorize algebraically

$$(xy+N)^3+N(x-y^2)^3.$$

16571. (W. J. GREENSTREET, M.A.)—If $\Sigma a=\Sigma x=\Sigma ax=0$, then

$$\Sigma ax^7=xyz\,\Sigma x^2\,\Sigma ax^2.$$

16572. (Professor STEGGALL.)—If

$$xy+ax+by+c=0,\quad yz+ay+bz+c=0,\quad zx+az+bx+c=0,$$

then $x=y=z$ or $a^2-ab+b^2=c$. If, in the latter case, $x+y+z=0$, find the equation giving the values of x, y, z.

16573. (G. N. WATSON, B.A.)—The conic of closest contact, C, is drawn to a cubic curve with a double point, at the double point. The tangents to the cubic at the double point are T_1, T_2, the tangent which is touched by the conic being T_1; I is the straight line on which the inflexions of the cubic lie. Prove that I touches C at the point where T_2 meets I.

16574. (K. S. PATRACHARI.)—Find the polar equation of the curve in which the distance along the tangent from the point of contact to the foot of the perpendicular upon it from the pole is constant.

16575. (W. F. BEARD, M.A. Suggested by Question 16486.)—ABC is a triangle; a conic is described to touch AB, AC at B, C and to touch the circum-circle; if P is the point of contact and PQR is drawn parallel to BC to meet the circle at Q and the conic at R, prove

$$PQ=QR.$$

16576. (Professor NEUBERG.)—Une parabole P touche les côtés de l'angle xOy aux points donnés A et B; une seconde parabole P′ touche ces côtés en C et D. Construire le troisième tangente commune aux deux paraboles.

16577. (Hon. G. R. DICK, M.A.)—P is any point in the plane of a triangle ABC whose circum-centre is O; a, b, c are the sides, R the circum-radius, Δ the area and AP $=x$, BP $=y$, CP $=z$. Show that $\Delta.OP^2=R^2(\Delta\pm\Delta')$, where Δ' is the area of a triangle whose sides are ax/R, by/R, cz/R respectively. Deduce Ptolemy's theorem.

16578. (S. NARAYANA AIYAR.)—If O (AA′, BB′, CC′, ...) be any pencil in involution, and if a circle be drawn through the point O cutting the rays of the pencil in the points A, A′; B, B′; C, C′; ...; then the locus of the orthocentre of the triangles OAA′, OBB′, OCC′, ... is a circle.

16579. (V. RAMASWAMI AIYAR, M.A.)—If the line joining the vertex A to the circum-centre O of a triangle ABC cuts the sides FD, DE of the medial triangle DEF in the points B′, C′; and O′ be the harmonic conjugate of O with respect to B′C′. Prove that the circle described on OO′ as diameter touches the nine-point circle of ABC.

16580. (R. GARDNER.)—Given the length of each side of a quadrilateral, and that the diagonals are perpendicular, find the lengths of the diagonals.

16581. (JAMES BLAIKIE, M.A.)—AKL, BKL are two triangles such that AB is parallel to KL, also AB $>(n-1)$ KL, and $<n$KL. Prove that the two triangles can be shown to be equal by the superposition of $2n+1$ rectilineal portions (or, if possible, by a smaller number).

16582. (Professor SANJÁNA, M.A.)—If $C_2, C_3, C_4, \ldots$ denote the sums of the products taken 2, 3, 4, ... at a time of the quantities

$$\cos(\theta+2\pi/n),\ \cos(\theta+4\pi/n),\ \ldots,\ \cos[\theta+(2n-2)\pi/n],$$

prove that

$$(-2)^2C_2\sin\theta=\sin3\theta-(n-1)\sin\theta,\ (-2)^3C_3\sin\theta=\sin4\theta-(n-2)\sin2\theta,$$
$$(-2)^4C_4\sin\theta=\sin5\theta-(n-3)\sin3\theta+\tfrac{1}{2}(n-1)(n-4)\sin\theta,$$
$$(-2)^5C_5\sin\theta=\sin6\theta-(n-4)\sin4\theta+\tfrac{1}{2}(n-2)(n-5)\sin2\theta,\ \ldots.$$

16583. (Professor NANSON.)—Show, geometrically, that in a spherical triangle $B+C>=<\pi$ according as $b+c>=<\pi$, and deduce (1) that the greater side is opposite the greater angle, (2) that any two sides are greater than the third, (3) the three sides are less than the perimeter of a great circle.

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11224. (Professor WOLSTENHOLME, Sc.D.)—If three pairs of parallel generators of the hyperboloid $ax^2+by^2+cz^2=1$ be drawn, they will form a *gauche* hexagon, whose sides are edges of a parallelopiped; prove that the two corners of this parallelopiped which do not lie on the given hyperboloid lie on the hyperboloid $ax^2+by^2+cz^2+3=0$, that the volumes of all such parallelopipeds are equal, and that the sum of the squares of the three diagonals of any one of them whose ends lie on the given hyperboloid exceeds the square of the remaining diagonal by a constant quantity.

11462. (H. W. SEGAR.)—Show that (n^2+n+1) multiplied by

$$\begin{vmatrix} 1! & 2! & 3! & \ldots & n! \\ 2! & 3! & 4! & \ldots & (n+1)! \\ 3! & 4! & 5! & \ldots & (n+2)! \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ n! & (n+1)! & (n+2)! & \ldots & (2n-1)! \end{vmatrix}$$

= the same determinant with the constituents of the last row multiplied by $n, (n+1), (n+2), \ldots, (2n-1)$ respectively.

11581. (The late Professor CLIFFORD, F.R.S.)—Prove that (1) the co-ordinates of a point on a curve of the third order or class may be expressed in terms of elliptic functions of a parameter u; and hence (2) when $u+v+w=iK'$, $\begin{vmatrix} 1 & \mathrm{sn}^2u & \mathrm{sn}\,u & \mathrm{cn}\,u & \mathrm{dn}\,u \\ 1 & \mathrm{sn}^2v & \mathrm{sn}\,v & \mathrm{cn}\,v & \mathrm{dn}\,v \\ 1 & \mathrm{sn}^2w & \mathrm{sn}\,w & \mathrm{cn}\,w & \mathrm{dn}\,w \end{vmatrix}=0.$

11584. (Professor HUDSON, M.A.)—Assuming that a mass of liquid contained in a vertical cylinder can rotate about the axis of the cylinder, under the action of gravity only, in such a manner that the velocity at any point of the liquid varies inversely as the angular velocity of its distance from the axis of the cylinder, find the form and position of the free surface.

11602. (J. J. WALKER, M.A., F.R.S.)—Show how to form, say in the case of three or four linear equations, the cubic or biquadratic whose roots shall be the values of the three or four unknown quantities—of course, without assuming the usual solutions of those linear equations.

11663. (Professor LITTLEHALES.)—A. discovers a circular shoal spot, 100 yards in diameter, in mid-ocean, and determines the geographical latitude of its centre within 2′, and its longitude within 3′. B. attempts to find the shoal again by proceeding to the geographical position assigned to it by A., and making a cast of the lead; but he can only determine within 2′ of latitude and 3′ of longitude when he has arrived at the assigned position. What is the probability that B. will find the shoal?

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, December 10th, 1908.—Sir W. D. Niven, President, in the Chair.

Messrs. G. F. S. Hills, H. B. Heywood, W. H. Salmon were elected members.

Mr. F. M. Saxelby was admitted into the Society.

The following papers were communicated :—

"On the Theory of Waves propagated vertically in the Atmosphere," Prof. H. Lamb.

(i.) "On Sir William Rowan Hamilton's Fluctuating Functions," (ii.) "On the Representation of a Function by a Series of Bessel's Functions," Dr. E. W. Hobson.

"Theory of Cauchy's principal Values (Fourth Paper)," Mr. G. H. Hardy.

"Note on a Continued Fraction equivalent to the remainder after n terms of Taylor's Series," Prof. L. J. Rogers.

"Solid Angles and Potentials of Plane Discs," Mr. Balak Ram.

"The Solution of the Homogeneous Linear Difference Equation of the Second Order," Mr. G. N. Watson.

"On Four Systems of Three Quaternary Quadrics that can be expressed by means of Five Squares," Prof. A. C. Dixon.

"On Differentials," Dr. W. H. Young.

(i.) "On Cubic Surfaces.—The Reduction of a Quaternary Cubic from the Sum of Six Cubes to the Sum of Five," (ii.) "Addition to a former Paper on the Eliminant of Three Quantics in two Independent Variables," Mr. A. L. Dixon.

Dr. T. Stuart gave an account of a method of solution of Mersenne's problem.

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The Educational Times.

"For Private Profit."

MARK TWAIN begins one of his books with a pretty eulogy of the ass, but goes on to say: "Instead of being complimented when we are called an ass, we are left in doubt." In Board of Education circulars a certain class of schools are described as being conducted for private profit. It is quite possible that nothing offensive is meant by the phrase, but the private-school masters are in doubt. The time has long gone by when it was considered disgraceful to take fees for giving instruction. Had they lived to-day, the Sophists would not have felt called upon to apologize for accepting the due reward of their labours. None of our modern teachers emulate those of the olden times who, according to J. R. Green, used to think so little about fees as to leave them lying about in the classroom—sometimes to the profit of the less scrupulous pupils who were already in arrears. The teacher of to-day, no doubt, like Brooks, "disdains a vulgar trade," but, unlike that famous club-founder, he no longer "blushes to be paid." This change of attitude marks teachers of all grades; so it is at least ungenerous to select one class and label it as specially given over to the desire for gain. As a matter of fact, many a private teacher would very gladly exchange gains with his public colleague. The teacher under a public authority works quite as much for the sake of money as does the private-school master. Money that comes direct from the parents should carry no stigma, just as money that comes by the more roundabout way of the public purse should carry no prestige. There is a subtle distinction in ordinary speech between a public servant and a servant of the public. The official schoolmaster is too often denied the first title, but this injustice is no excuse for attaching the second title to those who have private schools.

No slur is attached to a medical man because he practises his profession for private profit. He is none the less attentive to the interests of his patients because he insists upon their paying him a reasonable fee. The comparison here has a closer bearing on our subject than would at first sight appear; for there is an increasing tendency for medical men to seek public appointments. The recently instituted system of medical inspection is excellent so far as it goes; but it is unlikely that it will be allowed to remain as it is. It is already being asked: What is the good of inspection unless something is to be done in cases where grave but remediable defects have been discovered? Inspection must be followed by treatment, and, if the treatment is to be in the hands of the public doctor, what is to become of the private practitioner? We shall have circulars from Whitehall penalizing doctors who practise for private profit.

It may be objected that it is somewhat trifling to make so much of a mere phrase, and the contention may be willingly granted if the natural conclusion follows—that, since it is so trifling a matter, there can surely be no objection to remove a phrase that displeases those to whom it is applied and does not specially please those who use it. Why not cut out "conducted for private profit" and substitute "conducted for private enterprise"? Were this change adopted there would not only be no longer any possibility of reading a sinister meaning into the official description, but the new phrase would be really an accurate description of what the private-school master claims to be. Enterprise implies alertness, suggests efficiency, and, above all, calls up ideas of progressiveness and openness to new ideas. It is at least not unreasonable to maintain that the private schools, by the very fact that they are free from official restrictions, are in a better position to initiate new lines of development than those that are under public control. There is at the present moment great danger of the secondary schools of this country being reduced to a very undesirable state of uniformity. Centralized inspection of schools almost inevitably leads to an unwholesome sameness. The Board of Education is fully alive to this danger and is doing all it can to avert it, though it cannot altogether eliminate the levelling tendency. The desirability of considering the special needs of each school area is now generally recognized, and it is, perhaps, in this connexion that the private schools have their strongest claim to public support.

Signs are not lacking to indicate the rise of a demand for a different type, or different types, of school from that which is being stereotyped throughout the country. This is par-

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ticularly marked in the case of girls' schools. It would almost appear that the high-school type of girl is being produced in greater numbers than there is any demand for. High-school training for girls appears to have fallen into a vicious circle. Girls are prepared at their high school for the University. When they have finished with the University they find that the one thing they are specially fitted for is to be high-school mistresses. So back they go to the schools and train more girls to do as they have done. It will naturally be objected that all the girls trained at high schools do not go to the University, but the trouble is that they are all trained as if they were to go there. The same objection might be raised against the girls' high schools that was formerly raised against the Universities themselves, when it was maintained that their teaching was carried on as if all their students were to become University professors. Parents are getting a little tired of having their girls all brought up in the same way, and are looking about for other types of schools. It is natural that they should turn to the private school, and it is equally natural that the private-school teacher should do all she can to meet the reasonable demands of the parents. This, indeed, is the weakness in the private-school position. It may be said that a teacher who must consult the wishes of parents is no freer than the teacher who must satisfy a hard-hearted Board of Education and a swarm of specialist inspectors. The private-school master may well appeal to actual experience to show that schools such as his have actually shown greater elasticity than those under public control. He might even go the length of arguing that parents are anxious for the true interests of their children and are, after all, not imbeciles. But, as a rule, the private-school master feels the parent difficulty and would be glad of relief.

It is at this point that the compromise, never far from the mind of an Englishman, suggests itself. Why not seek to combine the advantages of both systems? Why not call in the Board of Education to support the private-school master when the parents make *unreasonable* demands? Why not get His Majesty's Inspector to play Mr. Jorkins to the private-school master's Mr. Spenlow? After all, this is what the really efficient private schools demand. The usual defect of the private school is the insufficiency of the accommodation and the inadequacy of the staff and apparatus. If now a given school is able to satisfy the Board of Education that in these essentials it is quite up to the standard exacted from schools under public control, there does not appear to be any just cause to regard it as inferior. But may we not go further? In the case of such a school, why should we stop short at recognizing it as efficient? On what grounds is a public grant to be refused? In the case of residential schools that draw from all parts of the country and the colonies, it may fairly be objected that they do not form a part of the local system of education; but when a boys' or girls' school does for its neighbourhood exactly the same sort of work as is done by a municipal school, the only difference being that it is conducted by private enterprise, there does not appear to be any valid objection to its being aided from the public funds. It provides school places that would otherwise have to be provided for by the Local Authority, and therefore effects a saving on the capital outlay of the district. An educational area ought to welcome any master with enterprise enough to provide a number of school places on the easy condition that he should, under the same conditions of efficiency as the municipal schools, share in the public grants. The exact amount of the fee to be charged might be a matter for arrangement, and a reasonable maximum might be fixed—a maximum that might considerably exceed the fee in the municipal schools. It has to be remembered, in dealing with this matter of fee, that the parents of pupils in such a school as this are among the heaviest contributors to the school rate; and it does not seem fair that they should get no direct benefit from the rates merely because they desire a somewhat different kind of education from that supplied by the local schools under public control.

NOTES.

We are glad that the English Association, in the multiplicity of the subjects within the purview of its operations, is giving attention to the teaching of English in the schools. The examinational results of such teaching appear to be open to considerable improvement. Some blame the teachers—of course; others blame the examiners. Very likely, examiners and teachers do not always operate from the same standpoint, and the pupils fall through between them. Still, we are more inclined to blame the system: the conditions and the methods. It may be simple enough for educated adults to write English with fluency and effect, but it is very far from a simple exercise for school children; they may speak their thoughts on any subject with freedom and clearness, but it is a very different effort to express the same things in writing. We will venture a suggestion or two on the most essential points. From a tolerably wide experience of examinations, we are driven to conclude that the first reform necessary is to insist on distinct and facile handwriting; the hand should write, as it were, automatically, without distracting the attention of the writer from the subject. The grammar of English, strictly regarded, is so insignificant that it need be little insisted upon: indeed, the whole mechanism of English for the purpose of composition—and this, we take it, is almost the sole grammatical purpose that need in general be considered—can be easily taught with the most trifling incidental references to grammar, and without even the mention of any of those technical terms that vex the soul of Prof. Sonnenschein (and others). [The method, with examples and exercises, has been exhaustively illustrated in a little volume—"First Work in English" (Longmans)—which was favourably discussed about a generation ago by the late Prof. Meiklejohn in a course of lectures at the College of Preceptors. The book, we should add, is not intended for direct aid in examinations; it is intended to utilize grammar for composition, and is only indirectly an aid to examinations.] The rest of the task will consist in the judicious selection of subjects for composition, in limiting correction to the more outstanding faults (to obviate discouragement), and in requiring frequent exercises for practice. The necessary practice involves a demand for more time; but this time would be

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more than compensated in later stages by the acquired grasp of the language. The study of English as literature is a subsequent consideration; but it will be of little avail without a trained discrimination of the good and the less good in composition.

In view of the discussion of the question of a Teachers' Register by the Head Masters and the Assistant Masters at their annual meetings, the *Morning Post* (January 15) reviews the position. "It is before all things desirable to-day," says our contemporary, "that teaching should be fully recognized as one of the liberal professions, and the mark which distinguishes these professions from all others is that they control the qualifications of all their members." The need for a Register was recognized by the Board of Education Act of 1899, "but the history of the Registration question since that date reflects little credit on the Board of Education, which then came into being." Willing co-operation with the teachers' representatives "has never been given." "Instead of doing everything in their power to bring about Registration, the Board have done a great deal to hinder it, and by their action have brought matters to a veritable impasse." Our contemporary concludes:

> The motive behind their action is difficult to discover. It may be that they sincerely desire to prevent the teaching profession from becoming a profession in any proper sense of the word, that they desire the teachers to become mere officials subordinate to a bureaucracy in Whitehall. On the other hand, it may be a matter of purely personal idiosyncrasy. Whatever be the motive, their action hardly tends to enhance the dignity of the Board.

It is anything but agreeable to make or to reproduce such strictures upon the Board of Education, and we should heartily welcome the earliest possible removal of the grounds of dissatisfaction.

In discussing the commercial value of languages it is well to distinguish—as usual. "A knowledge of languages is not necessary to success in business," says a City merchant. "Take a score of men in the City earning £3,000 a year, and you will probably find that scarcely one of them can sustain a conversation in any language but his own. It is breadth of outlook, grit, and adaptability rather than knowledge of foreign languages that make for success in commerce." These qualities, no doubt, must be possessed by the Napoleons of finance and by the Chevaliers of industry and commerce; and it is the anthropologist-biologist that must tell us how to obtain them. Yet it is extremely probable that the best natural equipment would be not inconsiderably aided by a competent knowledge of the languages of commerce—the £3,000 might be turned into larger figures. The school, however, has chiefly to do with the main body—the much more numerous and humbler members—of the commercial army, to whom a knowledge of one or more foreign languages may be the indispensable means of getting and maintaining a post where the Napoleonic qualities have less scope than the routine duty of executing the directions of a superior. It is enough to justify the claims of modern languages if they give the student a footing in the business world and a chance of rising, and about that there is no room for question. One may be an admirable linguist and yet fail in business; but a man with ordinary business qualities will be enormously helped by a knowledge of the languages pertinent to his particular class of business. As a means to an end, linguistic knowledge is all to the good, to say nothing of its value as culture.

Did we not hear something lately of a proposal to have secondary education represented specially in the House of Commons on the analogy of the N.U.T.? It is said that the elementary teachers have derived benefit from the presence of representatives in the House. Why, then, should secondary teachers not reap advantage from a similar arrangement? The question seems to resolve itself into simple elements: to find the money and to find the man (or men). Yet the processes may not prove so very simple in the working out. From Canada we hear of a movement with a similar purpose, but of quite another type. The three great Universities of the Dominion—McGill, Toronto, and Laval (Quebec)—aspire to the privilege of representation on the pattern of University representation in this country; and it is reported as probable "that an Act establishing this new departure will be passed next session." The Universities are within their right in endeavouring to magnify their importance and to look closely after their interests. It is for the Dominion Parliament to consider their claims in the light of the public interest. The special representation of Universities in this country is an anomaly that is not universally regarded as a success. But, if the Canadian Universities gain their point, they will, no doubt, be cited as an argument for the maintenance of the British anomaly when it comes to be assailed, as it is tolerably certain to be assailed, in the next Bill for adjusting electoral conditions. A fancy franchise is not easily to be justified in a democratic country.

The whole of Ireland is in uproar over the place of the Irish language in the economy of the National University, and the Irish journals are filled with reports of meetings, speeches, and letters seething with controversy. The Corporation of Dublin, after one vain attempt to assemble a quorum, has at last voted, 24 to 1, "that the Irish language should be made an essential subject for Matriculation in the new Irish University from its inception, if the University is to be an Irish and national institution in fact as well as in name." The County Councils, and other public bodies, have passed resolutions in the same sense, generally intimating at the same time that, unless Irish be made compulsory, they will "hold the rint." The Standing Committee of the Roman Catholic Bishops, however, while declaring their profound interest in the work of the National University, and "looking forward to the day when the Irish language will again be spoken throughout the country and will in consequence become largely the medium of instruction in the constituent colleges," have pronounced against compulsion and represented that, in order to reach the desired stage, "by far the best means is to set up in the colleges bright centres of Gaelic study that will, by their light and by their rewards, attract young Irishmen within the sphere of their Irish influence." To this the "Sinn Féin" replies that the "credulity of the Bishops has made them the easy

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victims of English intrigue, and declares that, if the Senate of the National University agree with the Bishops, then the people must treat the new University as an enemy." It is little wonder that an ulterior purpose is sought for in the action of the "Sinn Féin" and Gaelic League, when one considers the unpractical character of the contention in existing circumstances, when only a very small number of matriculants know any Irish, whether spoken or written. Probably the commanding position of the Chancellor, Archbishop Walsh, will settle the question definitely on the Senate. But the movement is undoubtedly significant; and, though Irish may not be made compulsory, it ought to have free scope for development.

SUMMARY OF THE MONTH.

THE Annual General Meeting of the Incorporated Association of Head Masters was opened at the Guildhall under the presidency of the Rev. Dr. A. W. Upcott, Christ's Hospital, on January 12. The Lord Mayor attended in state and welcomed the members of the Association. Dr. Upcott, in his presidential address, said that, whatever views might be taken of the provisions of the Education Act, 1902, it had left an indelible mark upon the history of education in this country—largely, he thought, for good. The Act had aroused an unprecedented amount of real and intelligent, if not always wisely guided, interest in education all over the country. The School Boards did a great deal for elementary education, but the Education Committees, controlling as they did both primary and secondary education and composed of men and women drawn from a wider and more liberal basis than the old School Boards, had done a vast deal more. With regard to the status and character of the teacher, he maintained that no system of education, however sound, would be truly and permanently successful unless they had the right persons to carry it into practice. The question of inspection was at present hardly ripe for public discussion. He believed inspection to be a healthy tonic for both head and assistant masters. With reference to the question of the registration of teachers, Dr. Upcott said he considered that the difficulty was capable of settlement without interfering with the principles of classification which they were now urging upon the Board. A large proportion of teachers of music, drawing, and other technical subjects were actually engaged in work in primary and secondary schools which came already under their proposed classification; those who were not so engaged could be included by the simple extension of their scheme so as to include the technological class now recognized by the Board as forming a third department of education. The following resolutions were adopted after discussion:

That the Association is of opinion that, with regard to the free places (now required to form 25 per cent. of admissions), when the total number of free places in a school amounts to 25 per cent. of the whole number of pupils, it should not be necessary in subsequent admissions to throw open 25 per cent. of the admissions, provided always that the 25 per cent. of free places in the school is kept up; and that, where the percentage approved by the Board of Education is less than 25 per cent., the same principles should be applied to the smaller percentage.

That this Association instructs the Council to take such further steps as may seem good to them to bring about a plan of registration in concert with other educational societies willing and qualified to co-operate; and is of opinion that no efficient Registration Council can be formed which is based on particular subjects of teaching rather than on the general type and grade of the education represented.

That this Association takes steps to secure an adequate scheme for the superannuation of masters in secondary schools, in conjunction with the Association of Education Committees and other bodies.

That this Association is of opinion that the time has come when the representation in Parliament of teachers in secondary schools should be secured.

That this Association welcomes the report of the Classical Association on the pronunciation of Greek.

That, in the opinion of this Association, (*a*) the salaries offered in connexion with head masterships of secondary schools have in several recent cases been utterly inadequate; and (*b*) that the Council be instructed to take action in the matter.

That this Association regards with approval attempts made to remove the inconsistencies of grammatical terminology which confront a young student who has to deal with several languages simultaneously.

Prof. Sonnenschein, D.Litt. (University of Birmingham), spoke on the last subject by special invitation. On the motion of Mr. W. W. Sawtell (Uxbridge), the following rider was added:

That this Association recommends the Council to take steps to meet the Classical Association, the Modern Languages Association, and the English Association to formulate a scheme of common terminological usage on definite lines.

THE Annual General Meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held (January 8) at St. Paul's School, West Kensington, the new chairman, Mr. W. A. Newsome, B.A. (Stationers' School), presiding. The following resolutions were passed:—

1. *Tenure.*—That, in the opinion of this Association, no assistant master shall sign an agreement (*a*) if it provides for the possibility of his dismissal at any time other than at the end of a school term, and after at least two months' notice has been given him, save in cases of grave misconduct; (*b*) or, if it does not provide that before the dismissal takes effect, the assistant master concerned shall be given the opportunity of appearing, with or without the help of a friend, before the governing body in his own defence.

2. *Superannuation Fund.*—That, in the best interests of secondary education, it is imperative that the Board of Education should take all necessary steps for the early establishment of a Superannuation Fund for Teachers in recognized secondary schools. Such a scheme should provide for (*a*) contributions to the fund from the teacher and the governing body; (*b*) the expenses of management being borne by the State; (*c*) the provision by the State of a disablement allowance; (*d*) the possibility of the teacher migrating from school to school without loss of pension rights.

3. *Federal Council.*—That this Association deeply regrets the withdrawal of the Head Masters' Conference from the Federal Council.

4. *Teachers' Registration Council.*—That this Association instructs the Executive to move the Federal Council to take such further steps as may seem good to them to bring about the formation of a Registration Council in concert with duly accredited representatives of other bodies desirous and qualified to co-operate.

5. *Pronunciation of Greek.*—That this Association approves of the scheme for the pronunciation of ancient Greek formulated by the Classical Association; with a preference for pronunciation of $\epsilon\iota$ diphthong and η as close and open *e* respectively, for that of the aspirates ϕ, θ, χ, as *p*, *t*, *k*, followed by a strong breath, and for υ like German modified *ü*.

THE Twenty-fifth Annual Meeting of the Association of Assistant Mistresses in Public Secondary Schools was held on January 9. The chair was occupied by Miss E. M. Bancroft (Redland High School, Bristol), who was declared to have been re-elected President of the Association. Miss C. L. Laurie (The Ladies' College, Cheltenham), in presenting the report of the Federal Council, said the constitution of the proposed Registration Council had occupied much attention during last year, but nothing had been done in the matter. The Associations of Assistant Masters and Assistant Mistresses had agreed on the previous day to ask the Federal Council to convene a conference, as representative as might be possible of the teaching profession, to consider the subject, and that request would come before the Federal Council on an early day. The President, in her address, remarked on the Endowed Schools (Masters) Act: she had received an unhesitating assurance from Mr. Runciman that women teachers were included within the operation of the clause which provided that a master should receive a proper period of notice before dismissal and that there should be a possibility of appeal. The draft scheme for the registration of teachers was not without significance for them in view of its inclusion of women among the members of the proposed Registration Council. Ground for the old reproach against the teaching profession that it lacked organization was ceasing to exist, and of late there had been unexampled signs of union among members of the profession in the pursuit of ideals. The division of work was becoming accentuated, and teachers tended more and more to become specialists. The question, What was an ideal curriculum? was still with them. In an overcrowded curriculum some subject must suffer, and usually that subject was one which had a first claim to consideration—the mother tongue.

Miss Jowitt (Training College, Bristol) initiated a discussion concerning pensions for teachers. The meeting passed a series of resolutions declaring that any pension scheme proposed by the Association should be national, that it should have Government security, and that all teachers should be eligible for it; that the retiring age should be fifty-five years, but the option of continuing work after that age should be granted if the govern-

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ing body of a school should so desire; that the scheme should be compulsory; that the teacher's contributions towards the pension fund should be on a sliding scale, increasing automatically with increases of salary; that, the scheme being compulsory, contributions, or a certain proportion of them, should be returnable in the event of a teacher's retirement before reaching the age at which a pension would become payable, but that no teacher with less than two years' service should receive any repayment; and that the minimum annual pension should be £50. Miss Laurie, in a paper on the principles that should underlie the planning of the science curriculum in girls' secondary schools, urged that the main reason for teaching science was to make children familiar with scientific method. She pleaded for an historical course of science specially suitable for the last year of school life and for those pupils who had not received any scientific training. Miss Wood (Leeds High School) read a paper outlining a school course of science applied to domestic life in which, she said, she was trying to work out the ideas of Prof. Smithells, of Leeds University. The great object of this new kind of science teaching was to make common things and ordinary phenomena the beginning of scientific instruction, and to develop scientific methods in connexion with the facts of everyday life. The household and, above all, the kitchen abounded in things which could be made objects of scientific investigation, and she outlined the training in science given in the "kitchen laboratory" which has been provided in the new high school buildings at Leeds.

The Annual Meeting of the Association of Public-School Science Masters was held at Merchant Taylors' School on January 12. Sir Clifford Allbutt, Regius Professor of Physic in the University of Cambridge, the President, delivered an address upon "The Function of Science in Teaching." What did they mean by science? They did not contemplate experimental science only: they included the pristine idea of all orderly knowledge, of analysis of concepts of whatever origin, for the construction of systems of affirmative propositions. Science—that was to say, scientific method—penetrated into all the studies of the modern school, as into all life. No doubt action might be "sicklied o'er" by too much thought, too much trust in analysis, and therein was engendered the distrust which the humanist had always felt of the scientist, for he winced to see the flower of literature stiffened into a diagram. Yet supreme creative faculty might be contemporary with analytic power. It was still said that boys were not of an age for natural science, but were they at a stage when imagination could best be nurtured on food more generous than natural science was supposed to be? Abstract science, he would admit, was not a rich food for the imagination, though it imparted to it a scope and virility which preserved it from rhetoric and sentiment. The healthy common boy should be outward bound, busy in the common range of wonderful visible things. Did they seek to foster the boy's seriousness, curiosity, and handiness? Memory had to be cultivated and the duty of drudgery had to be realized. Classics was becoming more of a living subject, thanks to the new history, the new geography, and the like; but he claimed that science had wrought these changes, and that, without leaving other studies undone, natural science would do much to ensure success in the retention of a boy's natural qualities. He had some bias against abstract science for boys, though he admitted that some mathematics must enter into the curriculum. In the upper forms, however, there should be a more extensive differentiation than at present, according to the bents, and perhaps even according to the vocations, of the pupils. At any rate, science was not a hobby, nor even a modern system of utilitarian ingenuity: it was a way of observing and interpreting everything, and he protested that to box off science—or classics either for that matter—artificially on a "modern" or any other "side" was to perpetuate an unnatural schism. An education which was not modern was an anachronism. He did not desire to see head masters more specifically scientific than linguistic, but he who would mould a school should inspire it as a whole and be in full and understanding sympathy with every part and function of it. A vote of thanks was accorded to Sir Clifford Allbutt for his address. Mr. Latter (Charterhouse), Mr. Berridge (Malvern), Mr. J. R. Eccles (Gresham's School, Holt), Mr. R. E. Thwaites (Leicester), the Rev. A. Cortie (Stonyhurst), and Mr. C. J. Gardiner (Cheltenham) generally agreed that both the modern and classical sides of a school should be merged up to the age of fourteen, several of them declaring that in their schools a common curriculum did now obtain. The remainder of the morning session was devoted to an address from Mr. M. D. Hill (Eton) on the anthropometric measurements being carried out at Eton, where, he said, about 400 boys had now been measured. He pleaded for the universal adoption of similar methods in other schools, the chief aims being to investigate the ethnology of Great Britain; to obtain curves of growth for different ages for different parts of the body; to detect any physical irregularities; and to measure the results of courses of gymnasium and the like.

In the afternoon papers on science curricula in public schools were read, followed by a brief discussion. Mr. G. F. Daniell dealt with the report of the British Association upon "The Sequence of Studies in Science"; Mr. W. D. Eggar (Eton) spoke of "Geography, considered as a Science Subject," declaring that the class subject "Geography" had expanded until it had lost all identity. The ideal treatment would be to teach its component parts, as physiography and elementary geology on the one hand and commerce and history on the other; Mr. R. G. Durrant (Marlborough) considered "To what Extent, and at what Stage, should Prevalent Views on the Nature of Solution be taught in Schools?" and Mr. G. H. Martin (Bradford), referring to "Science for the Classical Side," said that the only form of science which seemed to be of real interest to boys who would drop the subject at the end of about three years was one which was not only of immediate application, but which also furnished the basis of a future hobby. Subsequently Mr. C. J. Gardiner (Cheltenham) commented on the refusal of the General Medical Council to recognize public schools as institutions where medical education might be commenced. It was announced that Prof. H. E. Armstrong (City and Guilds Institute) had been elected President for the coming year.

The Private Schools Association (Incorporated) held its Annual General Meeting at the College of Preceptors on January 8. Dr. F. Arthur Sibly, who was elected honorary President for 1909, said that his work had been inspired and sustained by a deep conviction that the fight the Association was waging for freedom, variety, and elasticity in education was a fight of supreme national importance. The confidence reposed in him by the Council during his three years' tenancy of the chairmanship had also been a great inspiration to him in the arduous and anxious work. He was happy to feel assured that the status of the Association itself was now higher than it had ever been and that very great success had attended the work in which it had been engaged. He felt confident of the final victory of the principles for which they contended. The Hon. Secretary (Mr. W. L. Thompson, Newcastle) read the annual report. It had not been thought necessary, he said, to state again their protest against an all-embracing State system of education. That protest and the grounds on which it was based must be perfectly well known by all who had taken the slightest interest in the great problem of educational reform which had during the past few years increasingly exercised the minds of those who were solicitous for the national welfare. The members of the Association were second to none in patriotism, and entertained as sincerely as any the hope that this England of ours might, through educational reform or any other reform, be enabled to maintain its proud position in the forefront of the nations of the world. But, while they recognized the need for avoiding intellectual waste through lack of educational advantages for those who were mentally fitted, but unable through want of means, to profit by those advantages, they regarded the bringing of all secondary education under State control as an experiment of an extremely costly nature, which was as unnecessary as, owing to the very doubtful character of its results, it was unjustifiable. It was also reported that financially the Association was in a sounder condition than it had been for some years past.

At the annual meeting of the Association of Directors and Secretaries for Education, the President (Mr. W. A. Adams, Secretary to the Bristol Education Committee) welcomed the declaration of the Primate in his letter of December 3 to the Minister of Education that "contracting out schools must be the exception and not the rule." If this were not so, a set-back would be given to the cause of national education and an injury done to much of the constructive and unifying work of the last five years. One of the chief hindrances to progress was the financial strain on local authorities, as in the medical inspection of scholars and the feeding of necessitous school-children. There were still many urgent educational reforms that would doubtless be undertaken by local authorities if Whitehall would only bear a fair share of the cost: for example, the reduction of the size

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of classes, and the replacement of supplementary by certificated teachers. Relief to the rate-payer might be given in several ways. The grants for infants and for older scholars should be made uniform. Mr. McKenna's superior limit of 75 per cent. of the total cost of elementary school maintenance should be accompanied by a condition that the grant should in no case be less than two-thirds of the total cost, including loan charges, medical inspection, &c. And the period of repayment for new school buildings should be extended to fifty years.

Among the important subjects discussed were the medical inspection of children in elementary schools and after treatment. In some areas where there had been medical inspection it was found that after-treatment had not presented much difficulty and had been inexpensive, and that the parents generally had been disposed to pay due attention to the doctor's recommendations, so that the absence of compulsory powers had not presented overwhelming obstacles. One large county had set apart £350 to be spent between now and July, on after-treatment under a scheme to be approved by the Board of Education. Consideration was also given to the Code of Regulations in reference to "special" subjects taught in elementary schools, such as cookery, woodwork, gardening. A resolution was passed suggesting that the Code should be so revised as to give Local Education Authorities more freedom and greateren couragement to organize instruction in handicraft and domestic subjects.

The seventh annual meeting of the North of England Conference was held at Manchester on January 7 to 9, Bishop Welldon (Dean of Manchester) President. The effective business began on January 8, when Dr. Welldon delivered his presidential address, and discussions were held on the incidence of the cost of education, the supply of teachers, the teaching of languages, and the training of girls in domestic subjects. On January 9, the questions treated were the co-ordination of the curricula in primary and secondary schools, the place of the higher elementary school in the scheme of education, the relation of the University to evening teaching in industrial centres, and methods of teaching mathematics. A varied, important, and interesting programme.

The English Association held its annual general meeting on January 15 and 16. The report stated that the central body numbered 432 members—an increase of 148 during the year. The number of local branches in England had increased from three to six, and altogether, with the Scottish Branch, there were 1,291 members and associates—an increase of 313. Prof. Saintsbury was elected President. Prof. W. P. Ker spoke on "Romance." The eighteenth century, he said, was generally considered anti-romantic in literature, but it kept up the supply for its children, while the nineteenth century, which came in with a great romantic revolution in literature, cut off the tradition of romance amongst the simple, unliterary people, took away the Seven Champions from the schoolboy, and the ballads from the country-side. In the nineteenth century almost everywhere the old popular traditions of romance had withered up. The fairy tales which once were English were known, if known at all, mostly through Grimm.

On the question of English in elementary schools, Miss Gill (Head Mistress, L.C.C. Laxton Street School) read a paper summarizing her own experiences in endeavouring to give a taste for literature to girls from poor homes, who entered school at seven and a half and left to go to work at fourteen. The aim was not so much to impart knowledge as to lay a foundation for thought and to give the girls the power to seek knowledge of a right kind for themselves. The pupils took home the knowledge they had gained at school, and there were many instances of parents being interested and the local libraries being visited for books on art and literature. Mr. J. W. Samuel, B A. (Head Master, Millwall Higher Elementary School), observed, in the course of a paper, that only regular practice in reading aloud under skilled teachers could act as an antidote to mispronunciation of vowels and to the vicious elimination of the final consonant so prevalent in North, South, and East London. The double dialect was very prevalent—that was to say, while in school the child would speak decently, but would at once fall into the Cockney idiom when he went into the playing field. A conference on "Examinations in English" was opened by Mr. W. Jenkyn Thomas (Head Master, Hackney Downs Secondary School), who declared himself frankly anti-examiner. The British parent believed in multiplicity of examinations, and schoolmasters had to submit to his belief, either partly or absolutely. He was tired of hearing schoolmasters held responsible for every deficiency in English education, and even in English life. The style of teaching was the result of the way examination questions were set, and in nearly every case the examiners were as much, if not more, to blame. It was generally agreed that English was neither written nor spoken correctly, and a man or woman could obtain the highest University honours in English without being able to speak it correctly.

The Annual General Meeting of the Modern Language Association was held at Oxford on January 12. The Vice-Chancellor of the University (Dr. T. H. Warren, President of Magdalen) delivered an address of welcome to a large representative audience. Lord Fitzmaurice, the President, then took the chair. Prof. Fiedler, of Oxford, presented the annual report. The membership now stood at 730, an increase of forty or fifty on the year. The Master of Caius introduced the report on the training of modern language teachers, in which the Committee expressed the hope that everything was rapidly tending towards rendering compulsory some kind of training for modern language teachers. The Hon. Treasurer (Mr. Allpress) submitted the financial statement, and moved that the life membership be reduced from seven guineas to five, and this was agreed to. On the motion of Mr. Milner-Barry (Berkhamsted), seconded by Dr. Breul (Cambridge), a resolution was carried unanimously welcoming the recent change in the Board of Education regulations for secondary schools, which allowed greater freedom to schools in the choice of languages to be taught, and hoping that the Board would take further steps to encourage the study of German in secondary schools.

Lord Fitzmaurice, in his presidential address, pleaded more particularly for a knowledge of modern languages in their bearing on international intercourse and the amenities of society. "The exaggeration of racial pride and the intensification of racial hatred is one of the modern forms which barbarism has assumed in its war against civilization and progress." So wrote Sir William Ramsay, uttering his warning from among the ruins of the cities of St. Paul in the remote parts of Asia Minor. Now for this exaggeration, which disgraced movements otherwise productive of great deeds and arising out of noble aspirations, the only remedy was a knowledge of languages so that different races and nations might understand each other and not perish in fratricidal contests arising out of a want of mutual comprehension. Did anybody doubt, for example, that the widespread knowledge of the French language and literature in this country was one of the causes of the present good feeling between France and England, rendering as it did extensive international intercourse comparatively easy? If they, as an Association, were urging on the Education Office more extended opportunities for the teaching of German to be given in those secondary schools of which the curriculum came under official influences, they were acting not merely as educational enthusiasts nor as schoolmasters, but as promoters of an international work, who wished to carry the light of peace and goodwill into the obscure regions of mistrust and doubt. On the motion of the Vice-Chancellor, seconded by Mr. H. W. Eve, Dean of the College of Preceptors, a vote of thanks was passed to Lord Fitzmaurice for his address. In the afternoon Prof. Lanson, of the University of Paris, speaking in French, delivered an address on the subject of "How Voltaire wrote his Letters on England"; Prof. Fiedler gave an address in German on Goethe's "Faust."

Next day Mr. O. Siepmann (Clifton) read a paper on "Some Aspects of German Education," comparing German and English schools and deprecating the rigidity of parts of the German system. The Rev. H. J. Chaytor (Plymouth College) introduced a lively discussion on "The Teaching of French and German to Middle and Higher Forms." Personally he thought German best to begin with, and, where only one language was taught, it should be German. At the afternoon session Mr. H. A. L. Fisher (New College) read a brilliant paper on "Our Insularity": "England indeed was an island, but of all islands the least insular."

The Annual Report of the Geographical Association records a large increase of members during 1908. While 91 members have been lost by death or resignation, 241 members have been added to the roll, making the total membership 793—a record annual increase. The membership now includes teachers of every grade, school inspectors, and others interested in geographical education, both at home and abroad. During the first term of the year a series of six lectures on "Methods of Geo-

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graphical Instruction" were delivered in the Botanical Lecture Theatre of University College, London; and it has been decided to hold monthly meetings of the Association chiefly in London for the purpose of lectures by geographical experts and for the reading of papers by practical teachers and others. At the request of many members a lending library of geographical books has been formed. The *Geographical Teacher* has been issued regularly. The series of articles on counties or natural regions of the British Isles is being continued. The lectures given in London in the spring of 1908 have appeared in it. One of the most important activities of the Association is the answering of letters from members about books, maps, apparatus, &c.—a work that has increased considerably.

The Board of Education has issued as a Blue book (Cd. 4440) the reports from those Universities and University colleges in Great Britain which participated in the Parliamentary grant for University colleges in the year 1906–7. The present volume is the first of a series in which all the reports in any one volume relate to the same academical year. It is much to be regretted (as *Nature* justly remarks) that the Board of Education makes no attempt to collate the particulars provided concerning the seventeen institutions participating in the annual grant, which now amounts to £100,000. It is at present a long and tedious process to compare, say, the income, the endowments, number of staff, and students of one institution with those of another. The arrangement of the volume, in fact, compares very unfavourably with the similar report of the United States Commissioner of Education published at Washington. The Board of Education may earn very easily the gratitude of students of the progress of higher education in this and other countries by including in the report of next year a series of tables summarizing and comparing the educational condition of things in the Universities and University colleges here concerned. It would then prove possible to understand more precisely why certain institutions are selected to receive a Treasury grant while others are precluded.

The Visual Instruction Committee, appointed by the Secretary of State for the Colonies, has issued for various parts of the Empire a series of seven lectures on the United Kingdom, illustrated by lantern slides. The edition, which was prepared for the Indian Government, is now made available for use in this country. The lectures, written by Mr. H. J. Mackinder, have been published on behalf of the Committee by Messrs. Waterlow & Co., and may be obtained with or without the illustrative slides from Messrs. Newton & Co., 32 Fleet Street, E.C., from whom particulars can be obtained on application. The lectures on the Colonies and India, for which a special fund was raised by a committee of ladies presided over by Lady Dudley and under the patronage of H.R.H. the Princess of Wales, are in active preparation, and it is hoped that the first series will be issued in the coming year.

The total attendance at the Teachers' Guild Modern Languages Holiday Courses in 1908 was 112; at Tours, 24; at Honfleur, 56; at Neuwied, 26; and at Santander 6. This was a somewhat smaller total than in 1907, owing to a considerable reduction of entries at Tours and Neuwied, not entirely counterbalanced by the increased bumhers at Honfleur and Santander. Of the students, 44 were men and 68 women. This year, for the first time, Certificates of Proficiency on examination by the Teachers' Guild were awarded; hitherto, the certificates have been given by the local teachers on their own responsibility. The courses will be repeated in the same four centres in August, 1909. A new course, which will be of a specially practical and commercial character, will also be started at Lübeck, under the local guidance of Dr. Sebald Schwarz, Director of the Realschule.

There were 233 candidates for the Cambridge Higher Local Examination held in December. The class list now published shows that in Group B (for Latin, French, spoken French, German, and spoken German) 6 candidates gained First Class, 14 Second Class, and 52 Third Class. In Group C (for Arithmetic and Mathematics) 1 candidate gained First Class, 6 Second Class, and 79 Third Class. In Group D (for Logic, Psychology, Political Economy, and History of Education) no candidates gained First Class, 4 got Second Class, and 5 Third Class. In Group H (for English History, European History, Greek History, and Roman History) 7 candidates were placed in the First Class, 29 in the Second Class, and 28 in the Third Class.

The Rev. A. G. Butler, Fellow of Oriel College, Oxford, died at Torquay. He was an assistant master at Rugby under Dr. Temple, and he was the first Head Master of Haileybury College. He was the Butler of "Butler's Leap" at Rugby, head of the Rugby eleven in 1848, and winner of the racquet pairs at Oxford in 1855.

Much regret will be felt for the death of Prof. H. G. Seeley F.R.S., Professor of Geology at King's College. He was educated at Cambridge, where he became assistant to Prof. Sedgwick and did valuable original work in Palæontology. He was a cousin of the late Sir John Seeley. He conducted for many years Saturday excursions from London to study geological phenomena locally.

The Rev. D. W. Simon, D.D. Edin., died at Dresden on January 17 in his seventy-ninth year. He was chief agent for Germany of the British and Foreign Bible Society, 1863–69; Principal of Spring Hill College, Birmingham (now Mansfield College, Oxford), 1869–84; Principal of the Theological Hall of the Scottish Congregational Churches, Edinburgh, 1884–92; and Principal of Yorkshire United Independent College, 1893–1907. He translated several important German theological books, notably Dorner's "History of the Doctrine of the Person of Christ," and wrote numerous theological works.

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Oxford.

Though the Lent Term, when there is rather a dearth of interests, is often selected by reformers or firebrands (as they are termed by their opponents), we do not seem at present to be above the crater of anything very volcanic: possibly the movement for the reform of Congregation might, in the view of some, be described as that. The idea of the reformer is that now Oxford has become such a "residential town" the Masters of Arts who are qualified by residence as members of Congregation without being Professors or College teachers may well become a powerful outside party and have a large influence on University questions: so it is proposed to limit Congregation to those who are intimately connected with University or College work. It may be urged on the other side that, in the first place, those who would be disqualified have, in many cases either as coaches or schoolmasters, a considerable interest in many subjects which come before Congregation; that, secondly, the point of view of those who live detached from caucuses or college jealousies is in itself a valuable asset; and, lastly, that those who do not take an interest—and an active interest—in University questions are not often to be found in Congregation, and so that a removal of these from the register would be to do an injustice to the others. After all, the election to the Boards of Faculties is now limited to teaching members of the University in the different subjects.

As your correspondent failed to supply you with notes at the end of last term, it is well here to refer to the appointment of Mr. D. G. Hogarth to succeed Mr. Evans as Keeper of the Ashmolean. Mr. Hogarth, after a successful career as a Demy of Magdalen, settled down first as a Tutorial Fellow in his own College; but his interests lay elsewhere, and he was elected, (I think) the first Craven Fellow under the new system. Since then, with Mr. Evans or "on his own," he has been engaged in archæological investigation in Asia Minor and elsewhere. Some of his earlier experiences of the less esoteric kind he gave to the world some years ago in that very readable book, "A Wandering Scholar in the Levant." His new appointment will not debar him from journeys "cognoscendae antiquitatis."

Another appointment in a different field is that of Mr. Selbie to succeed Dr. Fairbairn at Mansfield. Mr. Selbie is not a stranger to the place, as he was a tutor at Mansfield in the days of its infancy, but he has not been in Oxford for a good many years. It is not an easy task to succeed Dr. Fairbairn, who, after patient years of struggling with a considerable amount of jealousy and suspicion, gradually won himself a position as a leader and teacher in this home of conservative tradition.

Our new Greek Professor delivered his inaugural lecture on January 27, the subject being "The Interpretation of Ancient Greek Literature." He is also taking part in what may be said to be "teaching for the schools" by delivering a course of lectures on Homer.

Moreover, he is, with Mr. Cyril Bailey, of Balliol, taking a

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leading part in the production or reproduction of the "Frogs" of Aristophanes by the O.U.D.S. The Society, as on the previous occasion (when Mr. Bailey, Mr. Godley, and Mr. Hogarth gave advice), is calling in external and expert assistance not merely to ensure correctness of details, but also to secure actors who know Greek. We can all remember one unfortunate Greek play. With the exception (we hear) of one scene which was excused in the previous production, the play will be much on the same lines as on the first occasion (and the music of Sir Hubert Parry will again be used), though the translation will be not that of Mr. Godley and Mr. Hogarth, but Prof. Murray's own.

Though the river is full of boats, it is too early to say much of the prospects either of the Varsity crew or of the Torpids. It is high time that we won the Boat Race again. Our prospects for the sports and the Association match are said not to be particularly bright, but the hockey team is reported to be well above the average and to be unusually strong in the half-back line. It is remarkable, when one looks at the names of the hockey teams (South, West, East, &c.) selected for the various trial matches, to see how the pendulum has swung, and whereas a few years ago University players were not considered first class, the reverse is now the case.

East London.

An era in the history of the East London College was marked by the session which came to a close with August last. The work of the College became an integral part of the University of London. Two matters remain to be settled: the rearrangement of the Committees, which should include a provision for the representation of the staff on the governing body, and a conference with the other schools of the University on the question of the fees to be charged to students. Every hope is entertained that, before the conclusion of the session 1908–9, the College will have received full recognition of its position as the University College for East London from the Senate of the University, from the Local Education Authority, and from His Majesty's Treasury.

Leeds.

The Annual Report of the University Textile Department shows that great progress has been made in the session 1907–8. A feature of the past session has been the carrying out of inventions in warp-shedding mechanism. During the session the classes were attended by 137 students. In the technological examinations of the City and Guilds of London Institute, Leeds students proved very successful. In the four subjects in which they competed, they won five first prizes out of a total of eight awarded, two second prizes, and one third prize; and they carrried off all the prizes in the subject of Coal-tar Products.

Glasgow.

A resolution of the Scottish Modern Languages Association was submitted to the University Court, suggesting the earliest possible reform of the Bursary Examination, so as to give equal chances to modern languages candidates with candidates in other subjects, and the reorganization of the Modern Language Honours School, so as to allow of honours being taken in French and German separately. The Principal stated that these matters were under the consideration of Committees of the Senate.

Joint Matriculation Board.

The Joint Matriculation Board of the four Universities of Manchester, Liverpool, Leeds, and Sheffield has just issued its Report for the year 1908. The Board conducts the matriculation examination on behalf of the four Universities, and in the past year, for the first time, the examination has been held under the supervision of education authorities at eight local centres, at which 127 candidates presented themselves. The examination was also taken as a form examination at 28 schools. The total number of candidates at the July examination was 1,695 against 1,294 in the previous July, while in September the number was 519 against 438 in the previous year. As many candidates take the examination a year before they leave school, those who hold the certificates are now allowed to present themselves in a few subjects at the higher standard for supplementary certificates. On behalf of the Education Committees of Lancashire and Cheshire, the Board has conducted examinations for the award of Senior Exhibitions and Intermediate Scholarships offered by these Committees. It has also formulated a scheme, which has been accepted by the four Universities, for the inspection and examination of schools.

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CURRENT EVENTS.

Fixtures.

At the Members' Meeting of the College of Preceptors on February 17, Prof. J. J. Findlay will read a paper on "School Rewards and Punishments."

* * *

On February 4, Prof. Adams will commence at the College of Preceptors a course of twelve lectures to teachers on "The Psychological Bases of Teaching and Education." The course will be helpful to students who are preparing for the Diploma Examinations of the College.

* * *

Mlle. Th. de Mayol de Lugré will address the Société Nationale des Professeurs de Français en Angleterre on "Une Femme du Second Empire" at the College of Preceptors on February 27, at 4 p.m.

* * *

Following are some of the Courses of Advanced Lectures arranged by the University of London for the current term: (1) Six lectures on "Roman Municipal Institutions," by Dr. J. S. Reid, M.A., LL.M., Litt.D., Professor of Ancient History in the University of Cambridge, at University College, on Thursdays, at 4.30 p.m. (began January 21); (2) three lectures on "The Spanish Drama," by Dr. James Fitzmaurice Kelly, Litt.D., F.B.A., at King's College, on Tuesdays (February 9, 23, March 9), at 4.30 p.m.; (3) eight lectures on "The Principles of Illustration, with special reference to Class Teaching," by Prof. Adams, at the London Day Training College, on Saturdays, at 11.30 a.m. (began January 23); (4) Lectures on "Composers of Classical Songs" (continued), by Prof. Sir Frederick Bridge, M.V.O., D.Mus., M.A., at the University, on Fridays (February 12, March 5, April 2), at 5 p.m.; (5) eight lectures on "Physical Chemistry and its Bearings on Biology," by Dr. James C. Philip, M.A., Ph.D., D.Sc., at the Imperial College of Science and Technology, on Mondays, at 5 p.m. (began January 25). (1), (2), (5) admission free, without ticket. (3) open without fee to teachers; admission cards from Prof. Adams (give full particulars —name, address, school).

* * *

The following courses of lectures at the University of London, University College, have been arranged in conjunction with the Education Committee of the London County Council:—(1) Ten lectures on "Minnesang und Höfisches Epos" (in German), by Prof. R. Priebsch, Ph.D., on Saturdays, at 10 a.m. (commenced January 16); (2) ten lectures on "The Illustration of Fundamental Principles of Botany by the Study of Simple Types of Vegetable Organisms," by F. E. Fritsch, D.Sc., Ph.D., on Saturdays, at 11 a.m. (commenced January 23); (3) ten lectures on "The Structure and Natural History of Common Animals" (followed by practical work), by W. N. F. Woodland, D.Sc., on Saturdays, at 10 30 a.m. to 1 p.m. (commenced January 23); (4) twelve lectures on "Tudor Prose—More to Bacon," by R. W. Chambers, M.A., on Saturdays, at 10.30 a.m. (commenced January 16); and (5) eight lectures on "National Eugenics," by Prof. Karl Pearson, F.R.S., David Heron, M.A., and Miss Ethel Elderton, on Tuesdays,

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February 23, March 2, 9, 16, 23, May 4, 11, 18, at 5 p.m. Tickets to course (5) half-price (10s. 6d.) to members of the University, to school teachers, and to charitable and social workers.

* * *

THE School Nature Study Union will hold its Annual Conference and Exhibition of Nature Study Work at the London Day Training College, Southampton Row, W.C., on February 27, at 3 p.m.

* * *

AT the Child Study Society, London (Parkes Museum, Margaret Street, W.), there will be a reception of American teachers on February 11, at 8 p.m.; and Mr. W. H. Winch, M.A., will discourse on "The Age of Entry into School in its relation to Progress," on February 18, at 8 p.m.

* * *

AT a meeting of the Geographical Association, to be held at the North London Collegiate School, Sandall Road, N.W., on February 26, at 8 p.m., papers will be read (1) on "Pictures as an Aid to the Development of the Geographical Imagination," by Miss Sophie Nicholls, M.A., and (2) on "The Correlation of Instruction in Physics and Geography," by W. Maclean Carey, M.A., B.Sc.

* * *

MR. J. W. ALLEN, M.A., will give a course of six lectures on "English Medieval Architecture," on Fridays, at 4.30 (beginning February 5), at Bedford College for Women. Free to London University students and to teachers. Apply to the Principal.

Honours.

THE memorial to the late Prof. George Pixie, M.A., LL.D., is to take the form of a stained-glass window in the ante-chapel of King's College, Aberdeen University.

* * *

PROF. GILBERT MURRAY, M.A., LL.D., formerly Fellow of New College, Oxford, has been elected an Honorary Fellow of the College.

* * *

THE Geological Society has awarded the Lyell Medal and Fund to Prof. P. F. Kendall, of the University of Leeds, in recognition of his "important contributions to the science" of geology.

Scholarships and Prizes.

A GILCHRIST Studentship, £100 for one year, is open to women graduates in honours of the University of London of not more than three years' standing from their first graduation. Winner must take a course of study in an approved institution in preparation for some profession. Apply to the Principal (with three testimonials and three references) by February 28.

* * *

DOWNING COLLEGE, CAMBRIDGE, offers Minor Scholarships in Natural Science and Mathematics. Examination begins March 2.

Endowments and Benefactions.

SERAMPORE COLLEGE, Calcutta, wants £250,000, to erect suitable buildings, to establish seventeen professorships, and to create two hundred exhibitions. In 1827 Frederic VI. of Denmark gave the College a University charter, with the power of conferring theological degrees, but this has hitherto been in abeyance from lack of funds.

* * *

SIR JULIUS WERNHER has promised a donation of £200 for ten years to raise the stipend of the Taylorian Professor of German from £500 to £700 a year.

THE German Emperor has presented his portrait to the University of Oxford. It is painted by Alfred Schwarz, and represents the Emperor in the red robes and holding the velvet cap of the Oxford D.C.L.

* * *

THE late Mrs. C. E. Warr has left £5,000 to the University of Cambridge for a Fellowship or Scholarship for Classical Research, to commemorate her late husband, Prof. G. C. Warr.

* * *

THE late Lady Louisa Goldsmid, widow of Sir F. H. Goldsmid, Bart., has left (under contingencies) £25,000 to Girton College; £15,000 between University College and University College Hospital; £3,000 to the Jews' Infant School, Commercial Street; and £3,000 to the London School of Medicine for Women.

* * *

MR. ALEXANDER ELDER, of Southport, formerly of Elder, Dempster, & Co., has given £12,500 for the foundation of a Chair of Naval Architecture in Liverpool University.

* * *

THE Churton Collins Memorial Fund is to be devoted to prizes for literature at the Universities of Oxford, Cambridge, London, and Birmingham—at the three first-named Universities in connexion with their extension work; at Birmingham, as Birmingham shall decide.

* * *

THE Goldsmiths' Company have added to the Economic Library of the University of London a large number of manuscripts, maps, and plans relating to inland navigation and the early days of railway enterprise in this country—mostly from the collections of John Urpeth Rastrick, an eminent contractor, and of his son, Henry Rastrick, who were prominent among the earliest pioneers of railway traffic.

* * *

THE REV. DR. FAIRBAIRN, on retiring from the Principalship of Mansfield College at Easter, will hand over, as a gift to the College, the whole of his theological and philosophical library.

* * *

THE late Mr. Thomas McKie, LL.D., Advocate, Edinburgh, has left (subject to his widow's life interest) a very considerable sum to the University of Edinburgh to develop and encourage in the University (1) scientific, medical, and surgical research; (2) the teaching and study of the English language and literature; and (3) the teaching and study of modern languages, especially French, German, and Italian.

* * *

THE Glasgow City Educational Endowments Board have given £500 to the Technical College towards the establishment of a Nautical School or College.

* * *

GLASGOW UNIVERSITY has been presented by a private donor with the valuable library of Celtic literature belonging to the late Dr. Macbain, of Inverness.

* * *

THE sons of the late Dr. George Macdonald, the novelist, have presented to the University of St. Andrews a collection of Gaelic MSS. of the late M'Intosh Mackay, LL.D.

* * *

AT Bangor University College, the Eyton Williams bequest of £10,000 is to be disposed of in one scholarship of £30, two of £20, two of £15, and two of £10, each tenable for three years.

* * *

PROF. GUSTAV S. OPPERT, Professor of Indian Tongues in Berlin University, formerly Under Librarian of Windsor Castle Library and Professor of Sanskrit in Madras University, has left the residue of his property to the Institution

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for the Teaching of Judaic Science, Berlin, to be known as the "Professor Gustave Oppert Endowment," for a Chair for the Teaching of Languages and for Oriental Research, and, after adequate provision for one chair (including a pension fund to the holder and, if necessary, provision for his widow and children), the balance of the income is to be accumulated until there is sufficient to endow two such chairs, which will be maintained in perpetuity.

* * *

MR. G. M. LAUGHLIN has bequeathed £20,000 to Washington and Jefferson College.

Appointments and Vacancies.

MR. GEORGE H. LOCKE, for the past two years Dean of the School for Teachers and Professor of the History and Principles of Education in Macdonald College, McGill University, has accepted the invitation of the City of Toronto to be the Chief Librarian of the Muncipal Libraries of the city. Mr. Locke was formerly Dean of the School of Education of the University of Chicago and for seven years editor of the *School Review*.

* * *

THE REV. W. B. SELBIE, M.A. Oxon., of Emmanuel Church, Cambridge, has been offered the Principalship of Mansfield College, Oxford, in succession to Dr. Fairbairn.

* * *

PROF. ABBOTT LAWRENCE LOWELL, Professor of the Science of Government in Harvard University, has been elected President of the institution, in succession to President Eliot.

* * *

DR. BENJAMIN IDE WHEELER, President of the University of California, has been selected as this year's American "exchange" professor at Berlin. He will lecture on Greek and Philology.

* * *

THE REV. GERALD S. DAVIES, a house master at Charterhouse School, 1874–1905, has been appointed Master of Charterhouse, in succession to the late Rev. Dr. Jelf.

* * *

MR. W. MORGAN has been appointed Professor of Motor-Car Engineering at the Merchant Venturers' Technical College, Bristol.

* * *

THE REV. R. M. GWYNN, M.A., Fellow and Tutor of T.C.D., has been appointed Warden of St. Columba's College, Dublin.

* * *

MR. J. TANQUEREY, Assistant Lecturer in French, Manchester University, has been appointed Lecturer in French in University College, Dundee (University of St. Andrews).

* * *

CAPTAIN H. G. LYONS, R.E. (retired), Director-General of the Survey Department of Egypt, has been appointed Lecturer in Geography in Glasgow University.

* * *

THE REV. A. C. KNIGHT, B.A. Oxon., assistant master and assistant Chaplain, Royal Masonic School, Bushey, has been appointed Head Master of Derby School.

* * *

MR. A. PLUGGE, B.Sc. Leeds, has been appointed Head Master of Dilworth School, New Zealand.

* * *

MISS M. DAVIE, B.A. Lond., Head Mistress, Truro County School for Girls, has been appointed Head Mistress of the Ripon Secondary School for Girls.

MR. T. O. COUPE, B.A. Cantab., has been appointed Tutor in St. Paul's Missionary College, Burgh.

* * *

CAPTAIN J. E. MIGNON, late of the Leicestershire Regiment, has been appointed Superintendent of Physical Training for the Surrey Education Committee.

* * *

MR. R. F. CHOLMELEY, M.A. Oxon., assistant master, St. Paul's School, has been appointed Head Master of Owen's School, E.C.

Literary Items.

MR. FISHER UNWIN is publishing a cheaper edition of Mr. Thomas Marshall's "Aristotle's Theory of Conduct"—a very helpful introduction to the "Ethics."

* * *

THE Selborne Society has revived the old title of its magazine, which will henceforth be called *The Selborne Magazine* (*and Nature Notes*) and will be published by Messrs. George Philip & Son, Fleet Street, E.C.

* * *

THE "Treatise on Zoology," edited by Sir E. Ray Lankester and published by Messrs. A. & C. Black, is now nearing completion. Five volumes have already been issued and two more will appear immediately.

* * *

MESSRS. J. M. DENT & CO. announce an important serial in sixteen parts (1s. net each) on "Trees and Shrubs of the British Isles, Native and Acclimatized," by C. S. Cooper, F.R.H.S., and Mr. Percival Westell, F.L.S.

General.

THE Royal Female School of Art, Queen Square, has been absorbed by the London County Council and transferred to the new Central School of Arts and Crafts.

* * *

A PROFESSORSHIP of Astrophysics (without salary—*pessimo exemplo*) is to be established at Cambridge; a Professorship of Gas Engineering is to be established at Leeds in memory of Sir George Livesey; the Merchant Venturers have appointed a Professor of Motor-Car Engineering in anticipation of the creation of a Bristol University; and the University of Göttingen has started a Chair of Aeronautics, which has been entrusted to Prof. Prandtl, the Professor of Applied Mechanics in the University.

* * *

THE Council of the Dublin Chamber of Commerce has unanimously passed a resolution requesting the Royal Commission on University Education in Ireland to inquire into the operation of Chairs of Commerce in Great Britain, "with a view, if advisable, to the foundation and endowment of a Chair of Commerce in the Dublin College of the new University."

* * *

THE University of Cambridge will celebrate the centenary of the birth of Charles Darwin and the jubilee of the first publication of "The Origin of Species" towards the end of June. Already some two hundred delegates have been appointed to represent institutions of learning in all parts of the world.

* * *

AT a meeting of the General Council of the Daly College, Indore, the Begum of Bhopal outlined a scheme for the foundation of a special University to which the Chief's Colleges in the various provinces would be affiliated, and which might be expected to raise generally the educational standard of these institutions.

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COLLEGE OF PRECEPTORS.
HALF-YEARLY GENERAL MEETING.

The ordinary Half-yearly General Meeting of the members of the Corporation was held at the College on Saturday, January 23.

The Secretary having read the advertisement convening the meeting, Professor Adams was appointed Chairman.

The Report of the Council was laid before the meeting and was taken as read, a copy having previously been sent to every member. It was as follows:—

Report of the Council.

The Council beg to lay before the members of the College the following Report of their proceedings during the past half-year:—

1. The Thirty-sixth Annual Series of Lectures for Teachers, which commenced on the 13th of February and ended on the 17th of December, comprised a Course of Twelve Lectures on "The Application of Psychology to the Work of the School," and a Course of Twelve Lectures on "The Practical Teacher's Problems." Both Courses of Lectures were delivered by Prof. J. Adams, M.A., B.Sc., F.C.P.

2. At the Summer Examination of Teachers for the College Diplomas, which was held in the first week in September, the number of candidates who presented themselves was 343. For the Christmas Examination 568 candidates have entered. During the past half-year the Diploma of Licentiate has been conferred on 20 candidates, and that of Associate on 76, who have satisfied the prescribed conditions.

3. For the Christmas Certificate and Lower Forms Examinations, which were held in the second week in December, the number of entries was about 6,700. The Professional Preliminary Examination for Certificates recognized by a number of professional bodies was held in the first week in September, and was attended by 204 candidates.

4. The Council have conducted during the past half-year the Examination of 4 schools by Visiting Examiners.

5. At the Members' Meetings held during the past half-year the following Lectures have been given:—"The Teacher's Imperfections, and how to deal with them," by Prof. J. Adams; "The Experimental Study of Instruction," by Prof. J. W. Adamson. Reports of these Lectures have been published, as usual, in *The Educational Times*.

6. During the past twelve months about 1,500 volumes have been issued to members. Considerable additions have been made to the Library by purchase and gift.

7. During the past half-year thirteen new members have been elected, including five honorary members; one name has been removed from the list, and notice has been received of the withdrawal of two. The Council regret to have to report the death of the following members:—Mr. W. J. Blanchard, L.C.P.; Mr. E. Clough; Mr. K. A. Federer, L.C.P.; Rev. L. Graham, L.C.P.; Mr. G. Heppel; Rev. J. Stewart, F.C.P.; Mr. T. Wild.

8. During the past half-year accumulated interest on the Teachers' Training Fund and the Benevolent Fund has been invested in the purchase of Stock: viz., £88 Great Eastern Railway Four per Cent. Debenture Stock on account of the Teachers' Training Fund, and £100 Consols on account of the Benevolent Fund.

9. The Council have had their attention drawn to the use of the expression "conducted for private profit," in publications issued by the Board of Education, to describe private schools. They have made a representation to the Board on the subject, and have pointed out that it is not the custom in the case of the members of other learned professions to distinguish in this way between those who are employed in the public service and those who are not so employed.

10. The proposals for the constitution of a Registration Council, which were referred to in the last Report, have been submitted to the Board of Education, who have suggested modification in certain respects, but Dr. Gow's Committee have urged that such modifications should be initiated by the Board itself. The Council greatly regret the delay that has occurred in the establishment of a new Registration Council.

11. The Federal Council have held two meetings during the past half-year, and have been mainly occupied with the Registration question. They have also considered questions relating to the assessment of income-tax in respect of school premises, and other matters.

In reference to paragraph 10, the Rev. Canon Bell stated that there was to be a meeting of Dr. Gow's Committee in February, which would include a large number of representatives of educational bodies, to press forward the subject of Registration. Members would probably be aware of the negotiations of Dr. Gow's Committee with the Board of Education and Sir Robert Morant. In that the Federal Council had its part, and members of it were represented on Dr. Gow's Committee.

The Report of the Council, with the accompanying Statement of Accounts, was adopted.

The Dean then presented his Report, which had been printed and circulated among the members attending the meeting. It was as follows:—

The Dean's Report.

In addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Christmas Examination of candidates for Certificates took place on the 8th to the 12th of December at 182 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Aldershot, Aylesbury, Balham, Bamford, Bangor, Bath, Belper, Bewdley, Bideford, Biggleswade, Birmingham, Blackpool, Bognor, Bournemouth, Braunton, Brentwood, Bridlington, Brighton, Bristol, Cardiff, Carlisle, Carmarthen, Cheadle Hulme, Cheltenham, Chepstow, Chertsey, Chiswick, Clapham, Clevedon, Congleton, Cork, Cowes, Crewe, Croydon, Devizes, Doncaster, Dublin, Durham, Ealing, Eastbourne, Edinburgh, Exeter, Fakenham, Fareham, Farnworth, Folkestone, Fraserburgh, Frome, Grantham, Gravesend, Harlow, Harrogate, Hastings, Hayle, Hereford, Herne Bay, Holsworthy, Huddersfield, Hulme, Hutton (Preston), Inverurie, Jersey, Kilfinane, Kington, Leeds, Liskeard, Liverpool, Llandudno, London, Longton, Lytham, Maidstone, Manchester, Margate, Market Drayton, Middlesbrough, Morecambe, Newcastle Emlyn, Newcastle-on-Tyne, Newport (Mon.), Newquay, Newton Abbot, Northampton, Norwich, Nottingham, Ongar, Penketh, Peterborough, Plymouth, Portsea, Portsmouth, Reading, Redditch, Richmond-on-Thames, Ripley (Surrey), Saham, St. Leonards-on-Sea, Sale, Sandwich, Scarborough, Selby, Sheffield, Shirley, Shoreham, Southampton, Southend, South Molton, Southport, Spalding, Stamford (Lincs), Stoke-on-Trent, Stokesley, Stonyhurst, Stratford-on-Avon, Sunderland, Swindon, Taunton, Thrapston, Walton (Liverpool), Warminster, Wellington (Salop), West Norwood, Weston-super-Mare, Weymouth, Whitchurch (Salop), Wisbech, Woodford, Workington, Worthing, and York. The Examination was also held at Gibraltar; Batticaloa and Colombo Ceylon); Stewart Town (Jamaica); Georgetown and New Amsterdam (British Guiana); St. George's (Grenada); St. Lucia and St. Vincent (B.W.I.); Port of Spain (Trinidad); Bulawayo, Cala, Grahamstown, Irene, Johannesburg, Klerksdorp, Ladysmith, Lydenburg, Oakford, Port Elizabeth, Potchefstroom, Pretoria, Uitenhage, and Umzinto (South Africa); Cape Coast; Lagos; Allahabad (India); and Lomas de Zamora (Argentine Republic).

The total number of candidates examined (not including 510 examined at Colonial and Foreign Centres) was 4,328, of whom 3,123 were boys and 1,205 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined for Certificates during the year (not including those who attended the Supplementary Examinations in March and September) was 9,050.

The following table shows the proportion of the candidates at the recent Examination who passed in the class for which they were entered:—

	Entered.		Passed.		Percentage.
First Class (or Senior)	429	...	203	...	47
Second Class (or Junior).....	1,743	...	988	...	57
Third Class	1,807	...	1,194	...	66

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (349 in number) who entered only for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 240 examined at Colonial and Foreign Centres) was 1,479—810 boys and 669 girls. Of these 1,287 passed, or 87 per cent.

At the Supplementary Examination for First and Second Class Certificates, which was held on the 8th to 10th of September in London and at the following Provincial Centres—viz., Birmingham, Bristol, Leeds, Liverpool, and Manchester—198 candidates presented themselves. The number of candidates examined at these Supplementary Examinations during the year was 490.

The Summer Examination of Teachers for the College Diplomas took place on the 31st of August and five following days in London and at the following Local Centres:—Birmingham, Bristol, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; and at Bombay and Vepery (India); Trinidad; and Beterverwagting (British Guiana). It was attended by 323 candidates—195 men and 128 women. On the results of this Examination, 19 candidates obtained the Diploma of Licentiate and 79 that of Associate.

The Christmas Examination of Teachers for the College Diplomas took place on the 28th of December and five following days in London and at the following Local Centres:—Banchory, Belfast, Birmingham, Bolton, Bristol, Dublin, Kyle, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; and at Mannheim (Germany); Calgary (Canada); Jubbulpore, Ootacamund, and Pondicherry (India); Prome (Burma); Capetown; Umzinto (Natal); Georgetown and New Amsterdam (British Guiana); and Anking (China). It was attended by 529 candidates—357 men and 172 women.

Practical Examinations to test Ability to Teach were held in February, May, and October. At these Examinations 10 candidates presented themselves, and 9 obtained Certificates.

The number of schools examined and inspected during the year under

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the Visiting Examination and Inspection Schemes (A), (B), and (C) was 7.

The Council have conducted, on behalf of the Newfoundland Council of Higher Education, the Associateship, Intermediate, Preliminary, and Primary Examinations of the Newfoundland Council. The examinations were held at 100 Centres in Newfoundland on the 22nd to 29th of June, and the numbers of candidates who were examined in the several grades were as follows:—Associateship, 62; Intermediate, 375; Preliminary, 871; Primary, 989.

The Council have conducted, on behalf of the Grenada Board of Education, an examination of teachers for Second Class and Third Class Certificates in School Management.

Mr. WALDEGRAVE commented on the unusual difficulty of the Second Class Arithmetic paper, to which he had already drawn attention in a letter to the Secretary. He was strongly of opinion that the standard of the paper should not have been raised without notice to the schools.

The DEAN said he was not aware that there had been any alteration in the standard of the paper, and the percentage of failures on that paper was not higher than usual.

The report was adopted.

The meeting then proceeded to the election of twelve members of the Council to fill the places of the twelve retiring by rotation, and three auditors.

Dr. MAPLES desired to record his protest against the form in which the voting paper had been prepared, as he contended that no mark should appear on the paper to distinguish between those candidates who were retiring from the Council by rotation and other candidates.

Mr. WALTERS asked whether any, and if so which, of the candidates nominated for the Council were non-subscribing members of the College, and the Chairman, after having ascertained the wish of the meeting on the subject, gave the required information.

Mr. KING called attention to the fact that the names of two of the members nominated as auditors also appeared on the list of nominations for the Council. He thought the names should not appear on both lists at the same time.

Mr. WILSON said that it was quite irregular that the same candidates should be proposed both for election on the Council and as auditors. The duties of an auditor were such that they could not be properly discharged by a member of the Council. The auditors were, in fact, the servants of the general body of the members, and not of the Council *quâ* Council, and were appointed for the precise purpose of protecting the members of the Corporation from errors, innocent or otherwise, in the statement of accounts annually presented by the Council to a General Meeting of the members. It seemed to him, therefore, that the right course to pursue, in respect of voting papers that contained the names of candidates for both offices, would be to reject them as bad on the ground of uncertainty.

The CHAIRMAN directed that the election for members of the Council should be taken first, and that, after the result had been declared, the election of the auditors should be proceeded with.

The SECRETARY read a letter from Mr. MOORE, withdrawing his nomination, which had been made without his consent.

The CHAIRMAN having appointed Mr. CHANDLER and Mr. WALLIS to act as scrutators, the voting papers were distributed and the election was proceeded with. On the scrutators presenting their report, the following were declared to be elected:—

MEMBERS OF COUNCIL.

A. W. Bain, B.A., B.Sc., F.I.C., Fairlight, Muswell Rise, Muswell Hill, N.
J. L. Butler, B.A., The Douglas School, Cheltenham.
E. M. Eagles, M.A., Enfield Grammar School, Enfield.
J. Easterbrook, M.A., Owen's School, E.C.
H. W. Eve, M.A., F.C.P., 37 Gordon Square, W.C.
Rev. R. Lee, M.A., Southcote, Elm Grove Road, Ealing Common, W.
Sir Philip Magnus, B.A., F.C.P., B.Sc., M.P., 16 Gloucester Terrace, W.
E. F. Marx, M.A., 11 Woodgrange Avenue, Ealing Common, W.
C. Pendlebury, M.A., 40 Glazbury Road, West Kensington, W.
W. G. Rushbrooke, M.A., LL.M., St. Olave's Grammar School, Southwark, S.E.
A. P. Starbuck, B.A., St. John's College, Green Lanes, N.
W. Vincent, Loughton School, Loughton, Essex.

AUDITORS.

John Bell, M.A., LL.D., 34 Redbourne Avenue, Finchley, N.
H. Chettle, M.A., Stationers' School, Hornsey, N.
A. E. C. Dickinson, M.A., LL.D., L.C.P., Grove House, Highgate.

The DEAN moved the following resolution:

"That the Council be requested to urge the Board of Education to proceed as soon as possible to the formation of a Registration Council representative of the teaching profession."

From time immemorial the College had been connected with the proposal for the formation of a Registration Council, and had promoted more than one Bill in Parliament for this purpose. The question was at present at a deadlock, and, unless at the meeting which was to be held in February, some further steps could be made, it was likely to remain at a deadlock. He thought the Council should do all they could to press the matter on the attention of the Board of Education.

Mr. BARROW RULE, in seconding the resolution, said the registration question had been before the College for fifty years, before any of the present Associations of teachers had come into existence. The College, having initiated the proposal, had worked continually at it, had introduced Bills into Parliament, and done all that they could for the furtherance of this object, and they should not allow other efforts to supersede or annul their own. They welcomed the co-operation of all Associations and bodies who might be willing to help them in this matter; but the question was peculiarly their own, and, concerning as it did the interests of private-school masters, it behoved them to do all they could to promote it.

Mr. ADDIS proposed that the resolution should read as follows:—"That the Council be requested to urge the Board of Education to advance the formation of a Registration Council representative of the teaching profession."

A member pointed out that the Board of Education had not had the necessary power given to it by Parliament to deal with the question. This had been very clearly stated by the Secretary of the Board of Education, and, therefore, while it was quite competent for the College to pass any resolution in favour of registration, it was desirable to put it in such a form that it should not be open to the legal objection he had mentioned. The Board of Education Act did assign to the Board of Education, acting under the Orders of the King in Council, the duty of forming a Registration Council; but the Education Act of 1907 did away with that obligation, and in the clause relating to Registration no mention was made of the Board of Education.

Mr. RUSHBROOKE suggested as an amendment: "That the Council be requested to urge the Board of Education to use what powers are at their disposal for the formation of a Registration Council representative of the teaching profession."

The DEAN having expressed his willingness to accept an amendment in the sense suggested, the resolution was adopted in the following amended form:—

"That the Council be requested to urge the Board of Education to use all the influence at its disposal to promote the formation of a Registration Council representative of the teaching profession."

Dr. MAPLES then moved the following resolution:

"That the Council be requested to consider, and report to the next Half-yearly Meeting, whether, by means of an alteration in the Charter of the College or otherwise, the work and usefulness of the College may be increased."

During the sixty years of its existence the College had, under able leadership, been enabled to do a great work for the advancement of secondary education. The conditions had, however, been entirely altered by the Act of 1902, and the work of the College in all its branches now appeared to be steadily diminishing, while its sphere of action was being more and more contracted. After having given, in support of this view, a number of particulars which had been collected from the official reports of the College, Dr. Maples went on to suggest that the College should adopt one of two courses. The first was to devote itself to the interests of private enterprise in education, and to appeal for support only to masters and mistresses of private schools. The other course was to endeavour to make the College really representative of all sections of secondary teachers; and he believed that such a course would result in a great extension of the work and influence of the College. For this purpose it would probably be necessary that the Charter should be altered so as to provide for the representation on the College Council of the various Associations among which secondary teachers were now distributed. An organization reconstituted in this way should be a

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powerful influence for the preservation of individualism in education. He would point to the National Union of Teachers as a striking example of the power which might be attained by a concentration of forces.

Mr. ORCHARD, without associating himself with all that Dr. Maples had said, thought a case for inquiry had been made out, and he therefore seconded the resolution.

The DEAN said he fully recognized the force of the arguments that Dr. Maples had advanced. The most important thing for the College was to secure a large increase in the number of its members; but he confessed that he doubted the practicability of making the College the centre of all the Associations connected with secondary education. A short time back, proposals for amendment of the Charter had been brought before the members of the College. The Council took the best legal opinion they could get, and they were advised that the scheme was impracticable. He was constrained, therefore, to demur to the reference in the resolution to alteration of the Charter, and he hoped that Dr. Maples would not press his motion to a division.

Mr. WILSON, while expressing his reluctance to place himself in opposition to any well considered scheme for advancing the interests of the College, was by no means sure that an attempt to reconstitute the College on the lines suggested by Dr. Maples, involving as it would the surrender of the Charter, would be likely to improve the position of the College. As Dr. Maples had pointed out, the College had achieved conspicuous success in the past, in spite of restraints which were imposed by provisions of the Charter. If it were desired to effect a great union of secondary teachers, the simplest solution of the problem would be for them all to join the College, and he knew of no reason why they should not do so. It appeared to him that Dr. Maples had inverted the right order of procedure, and that he ought to have brought his proposal before the Council in the first instance and had it there threshed out. He did not think that even the members of the Council had any adequate appreciation of the difficulties involved in surrendering or amending the Charter.

Mr. BARROW RULE said he regretted that the mover of the resolution should have tied the Council down to a period of six months, which he deemed to be inadequate for such a review, and, secondly, that he should not have laid his proposals before the Council and waited to have them discussed by his colleagues before bringing the matter before the General Meeting.

Mr. WALDEGRAVE expressed his surprise that there should be any opposition to this resolution. As the mover had pointed out, the position of the College was gradually deteriorating, and it would not be wise to wait till things got worse before devising means of revival. It had been suggested that they were discussing a scheme; but they were merely requesting the Council to consider the situation.

Mr. MILLAR INGLIS said that what Dr. Maples had tried to do was to interest the members in the affairs of the College. It was still possible for the Council to do a good deal to develop the resources of the College, though the time for some reforms had gone by.

Mr. ADDIS proposed, as an amendment, that the reference to the Charter be omitted from the resolution, and that the Council be requested simply to consider and report to the next General Meeting whether, by any methods, the work and usefulness of the College might be increased. For instance, it might be useful to organize a series of meetings for the discussion of questions of practical interest to teachers, including legislative measures dealing with secondary education. He would throw such meetings open to non-members as well as members.

Dr. MAPLES said that the reason why he had brought this resolution before the General Meeting, and not before the Council in the first instance, was that, in his opinion, it would not have been right for the Council to consider a question of this nature without having previously consulted the members of the College.

The amendment, on being put to the vote, was carried by a considerable majority, and the resolution, as amended, was adopted as follows:—

> "That the Council be requested to consider, and report to the next Half-yearly Meeting, whether, by any methods, the work and usefulness of the College may be increased."

A vote of thanks to the Chairman concluded the proceedings.

In the evening fifty-four members and friends of the College dined together at the Hotel Cecil, under the presidency of the Rev. Canon Bell. The company included Prof. Adams, Prof. Adamson, Mr. Addis, Mr. Andrade, Dr. and Mrs. Armitage-Smith, Mr. and Mrs. Bain, Mr. Barlet, Mr. and Mrs. Bateman, Rev. J. B. Blomfield, Colonel H. F. Bowles, Mr. Campbell Brown, Rev. J. S. Bruce, Mr. and Mrs. E. A. Butler, Mr. Charles, Rev. A. J. Church, Mr. Chalmers, Miss Clarke, Mr. Curran, Dr. and Mrs. Dickinson, Mr. and Mrs. Eagles, Mr. and Miss Eve, Mlle. Fleurmann, Mr. Felkin, Mr. Hawe, Mr. and Miss Hodgson, Mr. Hopkins, Mr. Johnson, Mr. Kelland, Mlle. de Mayol de Lugré, Dr. and Mrs. Maples, Mr. Mardling, Mr. Marx, Mr. and Mrs. Mathieson, Dr. and Mrs. Moody, Mr. and Mrs. Nicol, Mr. Rushbrooke, Mr. Ruf, Miss Smith, Mr. Southee, Mr. Starbuck, and Miss Steele. Colonel Bowles proposed the toast of "The College of Preceptors," which was responded to by the Chairman, and Mr. Eve proposed "The Visitors," which was responded to by Mr. Felkin. An attractive programme of vocal and instrumental music and recitations was much appreciated by the guests.

ADJOURNED MEETING OF THE COUNCIL.

AN adjourned meeting of the Council was held on January 23. Present: Prof. Adams, Vice-President, in the chair; Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Mr. Baumann, Rev. Canon Bell, Rev. J. B. Blomfield, Mr. Brown, Mr. E. A. Butler, Mr. J. L. Butler, Mr. Charles, Miss Crookshank, Mr. Eve, Mr. Hawe, Miss Jebb, Mr. Kelland, Miss Lawford, Prof. Lyde, Dr. Maples, Mr. Marx, Dr. Moody, Mr. Pendlebury, Mr. Pinches, Mr. Rule, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, and Rev. J. Twentyman.

The Secretary reported the death of Mr. W. H. Harris, the Rev. J. H. Newnum, and Prof. H. G. Seeley, three members of the examining staff of the College, and it was resolved that letters expressing the deep regret of the Council at their decease should be sent to their relatives.

He reported that the Institute of Actuaries had decided to recognize the First Class Certificate of the College as evidence of general education.

It was resolved that, on the voting papers to be used at the General Meeting for the election of members of the Council and of auditors, the names of the retiring members of the Council and auditors should be indicated by asterisks.

Applications for grants from the Benevolent Fund were referred to the Finance Committee for consideration and report.

The report of the Examination Committee was submitted, and was referred back to the Committee for the consideration of suggestions offered by members of the Council.

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Seatonian Prize: C. H. A. Field, M.A., formerly of Corpus Christi College. Member's Prize for an English Essay: C. W. P. Orton, B.A., Scholar of St. John's Subject: "Political Satire in English Poetry." Norrisian Prize (for prose essay on a sacred subject): E. A. Edghill, M.A., formerly of King's, and J. K. Mozley, B.A., Fellow of Pembroke, equal.

Corpus.—Fellowship: E. G. Selwyn, B.A., formerly Scholar of King's and Classical Lecturer of Corpus; Bell Scholar, 1905; Porson Prizeman, 1905; Porson Scholar and Browne Medallist, 1906; Waddington Scholar, 1907; Chancellor's Medallist and Winchester Reading Prizeman, 1908. Entrance Scholarships for Mathematics: W. Butterworth, King William's College, Isle of Man, £50; F. Sandon, Owen's School, Islington, £40; for Classics: W. M. Askwith, Bedford Grammar School, £40; R. M. Kirkpatrick, Marlborough College, £40; for Natural Science: P. C. L. Thorne, Berkhamsted School, £40. Exhibitions:—for Mathematics: W. H. Murray-Watson, Monkton Combe School, £25; for Classics: F. N. Harston, Eastbourne College, £30.

Queen's.—Entrance Scholarships:—Mathematics: E. M. Dultroff, Owen's School, Islington; F. W. Gardner, King's School, Chester. Exhibitions: L. W. Wood, Merchant Taylors'; G Rigby, Blackburn Grammar School; A. E. Bell, William Ellis School, St. Pancras. Classics:—Scholarships: J. R. Wade, Westminster; G. M. Wylie, High School, Nottingham; A. E. P. Sloman, Bradfield College. Exhibitions: P. A. Tharp, St. Paul's; A. E. Wild, Bury Grammar School, Natural Science:—Scholarships: G. Storey, King William's College, Isle of Man; R. H. Atkinson, North-Eastern County School, Barnard Castle. Exhibitions: J. T. Scott, St. Olave's School, Southwark; C A. Herapath, Royal Masonic School, Bushey; R. Taylor, Wolverhampton Grammar School. Hebrew:—Exhibition: A. Jephcott, Merchant Taylors'.

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St. Catharine's.—Scholarship for History: C. C. Taylor, Latimer Upper School. For Mathematics: E. M. Dultroff, Owen's School, Islington. Exhibitions:—Mathematics: E. M. Atkins, Wellingborough Grammar School. Classics: C. L. Tasker, St. John's School, Leatherhead; J. S. Purvis, Bridlington Grammar School; E. B. Hall, St. Paul's. History: H. Horrox, Bradford Grammar School; R. D. Milner, Weymouth College.

St. John's.—MacMahon Law Studentship: W. F. Sword, B.A., LL.B. Scholarships on the Casberd Foundation: A. J. Woolgar and Vyvyan Hope. Casberd Exhibitions: T. Owen Thompson, S. P. Lissant, H. S. Breakspear, and R. D. Middleton.

London University.—Passed in Pedagogy (external students): A. F. Allen, B.Sc., London Day Training College; R. Ashworth, B.A.; E. C. Childs, B.A.; H. A. Clayborn, B.Sc.; Ethel Emily Cox, B.A., London Day Training College; E. C. Cull, B.Sc., Hartley University College; C. B. Evans, B.A.; *J. M. Forster, B.A.; R. A. Jones, M.A., Royal Albert Memorial University College, Exeter; Jessie Parsons, B.A., Madras, London Day Training College; *Mary Passmore, B.A., St. Austell County School; L. H. W. Sampson, B.A., Oxford; Mary Kathleen Sladden, Mathematical Honours School, Oxford, St. Mary's College, Paddington; F. W. Tickner, M.A., B.Sc. (Econ.); †Charlotte Mary Waters, B.A.; †Mary Eleanor Whitaker, B.A.; Hilda Wilson, M.A., St. Mary's College, Paddington; and Alice Maud Wright, B.A. (*Excelled in the written examination. †Excelled in the practical examination.)

Oxford University.—Senior Mathematical Scholarship: Jonathan Hodgkinson, B.A., Scholar of Jesus; hon. mention, J. R. Pound, B.A., Scholar of St John's. Junior Mathematical Scholarship: A. L. Atkin, Honorary Scholar of St. John's. Exhibition: H. Coates, Scholar of Corpus. Distinguished in the Examination: J. Snow, Scholar of New College; F. J. Webb, Scholar of Brasenose.

Jesus.—Classics:—Open Scholarship: J. G. W. Fergusson, St. Andrews University: Open Exhibitions: W. J. Foote, University of Melbourne and non-collegiate student; A. B. Jordan, Nottingham High School. Meyrick Exhibitions: F. S. Purchas, Monmouth Grammar School; A. J. S. Hart, Monmouth Grammar School. Mathematics:—Open Exhibition: R. F. Wilkinson, St. John's School, Leatherhead. Meyrick Exhibition: C. R. Stephens, Manchester Grammar School. History:—Open Exhibition: H. R. Hardie, Mill Hill School: Welsh Scholarship: J. G. Edwards, Holywell County School. Theology:—Open Exhibition: S. H. Hooke, Commoner of Jesus College; Meyrick Exhibition: W. F. Phillips, University College, Cardiff, and Aberystwyth Theological College. Meyrick Graduate Scholarship for Research in Celtic Language and Literature: T. H. Parry-Williams, University College, Aberystwyth.

New.—Winchester Scholarships: R. H. Hutchison, T. K. Bewley, R. P. Hankinson, and W. Sheepshanks. Exhibition: A. W. Fagan.

Diplomas in Education (Secondary): John H. Baines, B.A., University College; George T. Kelland, B.A., Balliol; Lionel H. W. Sampson, B.A., Hertford; Francis J. Terry, non-collegiate; Richard M. Morgan, B.A., Aberystwyth. Ethel M. Barke, M.A., Girton; Ellen I. Benham, B.Sc., Adelaide; Henrietta E. T. Christie, Somerville; Jeannie Dow, Royal Holloway; Margaret F. Moor and Grace G. T. Muir, Somerville; Margaret E. Sale, B.A., Dublin; Ethel Stafford, B.A., Manchester; and Mary C. Thompson, B.A., Manchester.

Shaw Philosophical Fellowship (about £148 a year for five years, open to graduates in Arts of any of the four Scottish Universities of not more than 5 years' standing at the time of the competition): John Laird, M.A. Edin. *Proxime accesserunt*, A. A. Bowman, M.A. Glas.; H. A. Reyburn, M.A. Glas.; Leonard J. Russell, M.A. Glas.

OPEN COURT.

Thay haif said . . .
Quhat say thay?—Lat thame say!

A BUDGET OF CONTROVERSIES: MAINLY OVER MORAL EDUCATION.

By Dr. F. H. Hayward.

(*Continued from page* 26.)

3. When, if ever, Direct and Systematic?

We are inconsistent people, we English, susceptible to the call of "justice" or "mercy" from one quarter, deaf to a similar call from another quarter; "temperate" in one respect; "intemperate" in another. The foreigner, in consequence, calls us "hypocrites" and traces our moral blemishes to the perversity of our wills.

Bernard Shaw knows us better. The trouble with us is that our minds are foggy. John Bull's "blessed old head" has "all its ideas in watertight compartments, and all the compartments (are) warranted impervious."*

"John Bull's Other Island," Act I.

The middle-class code of ethics, which condemns "priggishness" as cousin to conscious hypocrisy is at least a century out of date. Ibsen has been among us, and, though he knew every cranny of the modern middle-class soul, he never once drew a conscious hypocrite. He knew Helmer and Ekdal and Peer Gynt; he knew men "with all their ideas in watertight compartments"; he knew men with Sunday consciences and class consciences and business consciences; he knew men with apperception masses in isolation from each other, and therefore "functioning independently," as Mr. Keatinge says. But he knew nothing of Pecksniff or Tartuffe, and little even of Iago and Parolles. And, consequently, Ibsen's plays do not at first attract us. We miss our conventional heroine, our conventional hero, and our conventional villain; and, worst of all, we miss the "hypocrite" and "prig." We have been taught to hate him; we have raised up barriers against his intrusion into our secondary schools. "The commandment, 'Don't be a prig,' has almost taken its place in the Decalogue," as Mr. Benson says; and now behold the greatest of all dramatists of modern human nature gives us never the prig, but constantly the man who has "all his ideas in water-tight compartments."

Now it is precisely against the defects of this latter man that some, at least, of the advocates of moral instruction would fain wage war. It is against lack of moral lucidity and imagination, against inaccessibility to ideas, against persistent and yet unconscious inconsistency of conduct, against the perfectly well intentioned "scoundrelism" which, in Bernard Shaw's opinion, is normal with "every man over forty"; against the moral "colour-blindness" which is the first stage towards the said "scoundrelism," and is alleged by public-school teachers to be characteristic of middle-class boys.

And yet, when advocates of moral instruction state their case for lucidity and system, they are met by a parrot cry against encouraging the *conscious* hypocrisy known as "priggishness"! Outside the ranks of the professional cadger I doubt whether a hundred conscious hypocrites exist in England. Of unconscious hypocrites there are some fifteen millions—almost the entire adult population; and twenty of the remaining millions—now children—are in process of arrival at the same goal.

Direct, systematic moral instruction? An attempt to introduce lucidity, continuity, and consistency into our moral ideas? An attempt to make our moral terminology effective, so that we may no longer deceive ourselves at every hour of the day or remain blind to countless duties? Anything but that! Morality must not be systematic! For ever and for ever it must be a series of scraps!

Accordingly Mr. Keatinge writes a book called "Suggestion in Education," and proves to his own satisfaction that haphazard "suggestion" is the best mode of moral instruction. In the course of reading the "Gallic War" or the "Ode on the Death of the Duke of Wellington," a few moral ideas of an isolated character may chance to enter insidiously into the boy's mind; and in this way he will best acquire a knowledge of moral truth. Such is "suggestion in education"! The teacher must be *for ever* "reticent," "discreet," and especially fragmentary and incidental.

Did ever the world see the like stated before in cold print? Do any of us need to be told of the value of such chance moral suggestions as spring out of fine books? Have we not urged that humanistic study should take a high place in every school? Is this not the best way to familiarize the boy with noble ideas and noble terminology? Who doubts it? Who has ever doubted it? But is there *never* to be system in our moral ideas? Are we to go on with "suggestions" and "scraps" for ever and ever?

The weakness of Mr. Keatinge's book is that it recognizes no necessity for system at *any* epoch of life. Not even when we marry, not even when we see our sons or daughters marry, not even when we totter on the verge of eternity, will our moral ideas be systematic. Let me interrogate.

Shall we introduce system into the moral ideas current in our *elementary* schools? The children are young; their experience is slight; their reading is limited; their reason is undeveloped; they have not reached the stage of adolescence, when sundry altruistic instincts begin to reach maturity. Surely *childhood* is not the best time for very systematic methods. The secondary schools? No; contrariant ideas are the obstacle there. Colleges and universities? Contrariant ideas are still the difficulty; besides, only a fraction of our people attend colleges and universities. Twenty years of life have now slipped away—the plastic years, apparently the predestined years for educational influence. Perchance the period from twenty to thirty is the

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one for systematization? Or that from thirty to forty? Mr. Keatinge does not say; and our only conclusion must be that John Bull's moral ideas must never be made systematic at all; his head must have its "impervious" and "watertight" compartments, with consequent "scoundrelism," for ever.

Prof. Findlay is a good deal wiser. His attack upon the employment of direct moral instruction applies only to the years before sixteen; and the attack, I admit, would be cogent if modern society were different from what it is, and if direct *im*moral instruction (or its equivalent) did not assail the primary-school child so early. I suspect that when Utopia has been attained Prof. Findlay's view will be recognized as true. In any case, he knows that in the later teens reason and conscience and personality are finally awake, and that now, if ever, is the time for direct methods. So I leave Mr. Keatinge to Prof. Findlay, assuring him that when he concedes* a place for direct moral instruction in primary schools, while discounting its efficacy in secondary schools, modern pedagogics, whether starting from the psychological notion of apperception or from the ascertained facts of adolescence, would exactly reverse his verdict.

I conclude this section with two questions: "Are moral ideas *ever* to be made approximately coherent or systematic? If they are, at what period of life?"

4.—"Doing, not Talking."

Mr. Paton has more than once expressed the opinion that "talks" about moral matters are of infinitely less importance than moral *action*. "What we want for English boys is not that they shall talk about these things (diligence, &c.), nor write essays about them, but that they shall love these things and live them . . . that they shall be big, generous, open-hearted, frank" —[What does "frank" mean? Does it imply "talking"?] . . . "with strong self mastery."† In the algebra lesson—a fine field for exercising will power, in Mr. Paton's belief—"the better the class and the better the master, the less will be said" [about honesty or temptation]. "It is by practice, not by precept, that we become perfect."

These words are normal, orthodox, and inevitable whenever the public-school master is called on to discuss moral education. He has them on the tip of his tongue; they echo in the chambers of his memory; and they are themselves (like the horror of "priggishness") a concrete illustration of the fact that in one case, at any rate, words possess an almighty power. Add to them the other copy-book maxim that "example is better than precept"; and the platform platitude—true, like most platitudes, and also fundamentally useless—that "the most important moral influence is the personality of the teacher" —and the armoury of the public-school man is almost complete.

It almost makes one despair to find that the fallacy underlying this phraseology is not seen at once by an educated man. "Every boy knows what it is to be diligent and thorough in his work, what it means to be truthful, honest, and pure." The reader will note the narrowness and conventionality of the catalogue—so reminiscent (*pace* Mr. Paton) of the headings of the old-fashioned moral lesson book ("Overcome obstacles by perseverance," "Honesty is the best policy," &c.); the apparent absence of any imaginative grasp of the fact that new moral duties, eugenic, æsthetic, civic, &c., may be dawning on the race and beckoning us forward. But, accepting the catalogue as it stands, can we truly say that every boy *knows* these virtues? It is not even true that Mr. Paton *knows* them; he constantly implies that diligence in performing mere drudgery is a virtue; and he never refers to the fact, pointed out years ago in the fifth chapter of Prof. Adams's "Herbartian Psychology," that the bad man may be as diligent as the good. As for the "boy," certainly he "knows," in a verbal sort of way, the meaning of "diligence"; and if Mr. Paton is attacking the giving of purely verbal knowledge (such as the slum-child's knowledge of "meadow" and "forest") he does well; moral knowledge, to be effective, must be *apperceptive*, as every Herbartian has urged; it must be verbal, certainly (for a reason presently to be assigned), but it must be linked up to a mass of ideas, traceable to experience and instruction. That "every boy" *knows* (really *knows*) what "diligence" means in this sense, is as far from the truth as was Macaulay's famous statement about "every boy's" historical omniscience; if Mr. Paton consent, I shall be glad to set a few questions on "diligence" for his Manchester boys, in order to put the matter to the test.

My own conviction is that deep ignorance is at the root of almost or quite all the moral evils of the day. I will go so far as to say that few *adults* "know" what it is to be diligent, thorough, truthful, honest, and pure; in the realm of *honesty*, for example (commercial, international, &c.), there is notorious fog and confusion; while, as to Mr. Paton's favourite virtues of diligence, thoroughness, &c., he will find, in "A Modern Utopia" of Mr. Wells, some indications that the significance of these virtues is perhaps rather different from what he imagines. If we were dumped down among the lotus-eaters, or in certain other situations not unknown to readers of Greek and oriental history, these strenuous virtues would be regarded as forms of vice or lunacy. And I am not at all sure that my "diligence" and "perseverance" in the present controversy are striking the readers of this journal with admiration.

Let us, however, make the amazing admission that every boy *knows*, in a measure, and even appreciates, the cardinal virtues; the question arises, How did he get to know and appreciate them? Mr. Paton must at once fall back either upon a "faculty doctrine" (there is a "faculty" of conscience) or upon an admission that moral knowledge comes from the environment.

Now modern sociology rejects the former view; "the old conception of a special faculty of moral intuition . . . was the third of a trio of false psychological assumptions," says the most recent writer on the subject*; and Dr. Stanley Hall regards as an "old superstition" the notion that "children have innate faculties of such a finished sort that they flash up and grasp the principle of things by a rapid sort of first intellection."† But this "old superstition," he adds, "persists in full force in moral and religious training," and Mr. Paton appears to be an example of its persistence ("every boy knows" . . .), unless, of course, he choose to admit that the boy's moral knowledge and appreciations come from the environment.

But if they come from the environment they will be limited by the environment; what the boy "knows" will be much or little, true or false; virtues outside the environment, or uncongenial to it, will be unknown or unappreciated; and perhaps certain virtues will be called vices, or the reverse. Mr. Paton's everlasting stress upon the "school virtues"—as if these constituted, or at least summarized, the whole duty of man—is itself significant; and I may say, once again, that no advocate of moral instruction asks for the old-fashioned and pedantic reiteration of what is already obvious or inevitable (what "every boy knows"); nor for dull hectoring of a class for sundry faults (possibly caused by pedagogical arbitrariness or ignorance); but for something far finer, something rational and alluring, something that "every boy" does *not* know.

Once admit that the conscience is no ready-made faculty, but a dynamic process involving memories, ideas, and suggestions, all derived from the environment and possessing all the limitations and perversities of that environment, the teacher will be compelled (unless he is morally bankrupt and hopelessly unimaginative) to give moral instruction or to organize some equivalent of moral instruction. He will commence a process of elucidating, refining, completing, or correcting, and then, to the extent that he finds moral terminology thin, artificial, or perverse, he will be compelled to reorganize his curriculum and to enrich it more particularly on the side of history, biography, and literature, so that indirect moral instruction may adequately supply the apperceptive needs of direct moral instruction.

And I do not see how all this is to be done without "talking." Educationists will never realize how immensely significant in all matters of morality is the spoken word, which Mr. Paton regards as relatively unimportant, until their imaginations have been touched by the great and broadly true doctrine associated with the name of Weissmann.

They must picture the chain of germ-cells stretching backwards into the vanished past and forwards into the shadowy future; and, attached to that immortal chain, the clusters of somatic cells which constitute the bodies of individual men. We appear as the offspring—or, rather, the by-products—of the germ-plasm—not the makers of its living links; we take what it gives us, and we can give nothing to it.

The vision, when it first rises before us, is little short of appalling. We feel like Macbeth as the ghostly series stretch on to the crack of doom. The continuity of the germ-plasm spells the worst confirmation of our fears. Science has closed the doors of hope, and heredity is, indeed, omnipotent. We are

* "Moral Education Congress Papers," page 133.
† *Daily News*, October 1, 1908.

* McDougall's "Social Psychology."
† "Youth."

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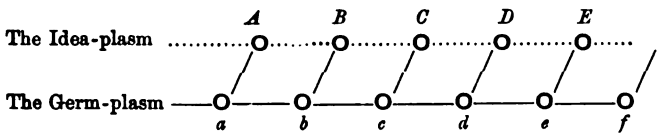
offshoots from the trunk of the mighty being, congenital parasites which it periodically disgorges, appendages with rootlets fixed desperately and precariously in its substance, and with no single tentacle feeling upwards.

This, apparently, would be a true, if gloomy, picture of human life except for the factors which Mr. Paton would have us despise. Man's is the gift of speech, and man's, pre-eminently, is the gift of writing. "Talking about" morals and "writing essays" about morals happen to be the two and the only means by which man has been lifted out of bondage to the germ-plasm. An ethical tradition, handed down by word of mouth and through books, is another "plasm" in which our life is rooted, and there is no third. These quaint champions of orthodoxy and *laissez-faire*, these confident opponents of moral instruction are—though they do not know it—the only fatalists, the only materialists, the only cynics in the educational world. Possibly the diagram that follows may serve to change their verdict upon the folly of "talking about" and "writing about" morals.



a, b, c, d, e, f, . . . the germ cells.
A, B, C, D, E, . . . the somatic cells.

[Germ cells and somatic cells together, $a+A$, $b+B$, constitute an individual being; all links with past or future are through the germ cells, which are "continuous" from generation to generation.]

Such, diagrammatically (minus the dotted line), would be the history of the human race *apart from the factors which Mr. Paton depreciates*. Everything human would be locked up in the chain of germ cells; no bridge would join the individual A with the individual B except the round-about bridge of physical heredity; and upon the quality and durability of that bridge the fate of humanity would depend.

But, luckily, there is another bridge between A and B; a fragile one of words and phrases and maxims; of records of humble efforts and heroic deeds; of legends, of poems, of novels; of works on citizenship and philosophy. Neglect this bridge, or despise it, or destroy it, and the human race will sink back to what it once was—a chain of appendages strung on to the germ-plasm and dependent wholly upon it. This other bridge is shown in the diagram by the dotted line.

Dropping all metaphors, I would urge that our schools are called upon to hand down a moral tradition embracing those best elements of the past which are likely to be the most helpful elements for the future. The genius of the great has to be made the heritage of the humble. Otherwise, one only result is possible. What was missing in the primitive savage who had accumulated no imposing moral tradition—who had no time to "talk about" morals or "write essays" about morals—will be missing in the modern boy from whom that tradition is ostentatiously withheld. The missing factor will be moral vision, moral perception, moral apperception. And, curiously enough, this factor is actually alleged to be missing by men who have good reason to know. The public-school boy is said to be "morally colour-blind." And, still more curiously and significantly, he is said to be a "savage" or "barbarian," the witnesses here showing a knowledge of sociology deeper than they themselves would claim. Lastly, he is alleged to have "low moral admirations," an allegation which at once provokes from the Herbartian the inquiry, "How can you expect to awaken 'high moral admirations'—identical with 'apperceptive interest' in moral truth—unless you provide the boy with apperceptive resources?"

The only answer open to the public-school master is a demonstration that his favourite dogma of "formal training" or "faculty training" is true; and that, by a series of school activities (games, classical drill, &c.), the boy acquires all necessary apperceptive resources.

One word more, however, upon the notion that "talking about" morals and "writing essays" on morals are things *tabu*.

If the schoolmaster refuse to set in use a dignified moral terminology, he will still have to employ, in his serious moments, a terminology of some kind, and to aid its currency among boys. What will it be? He dare not speak of "justice"; such language savours of the "prig," and perhaps of the "puritan"; but he can safely speak of "playing the game." He must, in fact, borrow his terminology from the world of sport.

> God give us bases to guard or beleaguer,
> Games to play out, whether earnest or fun;
> Fights for the fearless and goals for the eager,
> Twenty and thirty and forty years on.

The situation is saved! So long as the master's phraseology is that of the playing field, he can exhort and reprove to his heart's content. He can bid his boys be "sportsmanlike"; and even "essays" on pseudo-moral topics may be possible, provided the terminology is sufficiently and triumphantly trivial.

Moral metaphors borrowed from the playing fields may be as legitimate as religious metaphors borrowed from the Greek race-course; but they are neither dignified nor numerous enough to support a complete and progressive system of moral ideas. And yet the public school will have to make this desperate and despicable attempt if in "talking about" serious topics it refuses to employ a terminology worthy of the theme.

5.—Conclusion.

The main controversy must, however, range over the dogma of "formal training." If it can be shown that the volitional qualities demanded by school games and school pursuits do not (as Sir Arthur Hort recently admitted) flow over appreciably into life as a whole; and that "accuracy," "thoroughness," "observation," and the other faculties or processes are similarly recalcitrant, *apart from some process of instruction or elucidation*, our case is proved and our opponents' case is lost. And "formal training" is, indeed, apparently a lost cause.

AMERICAN NATIONAL EDUCATION ASSOCIATION.

Declaration of Principles at Cleveland, Ohio, 1908.

The National Education Association, now holding the forty-sixth annual convention in Cleveland, and representing teachers and friends of education in every state in this Union, makes the following declaration of principles and aims:—

1. Fully realizing that trained and skilled labour is a primary essential to the industrial and commercial welfare of the country, we cordially endorse the establishment by municipal Boards of Education of trade schools, industrial schools, and evening continuation schools; and further recommend that the instruction in these schools be practical and efficient, and have the advice, and the approval, of the trade interested to the end that graduates of these schools may at once become advanced apprentices or journeymen.

2. We recommend the subordination of highly diversified and overburdened courses of study in the grades to a thorough drill in essential subjects; and the sacrifice of quantity to an improvement in the quality of instruction. The complaints of business men that pupils from the schools are inaccurate in results and careless of details is a criticism that should be removed. The principles of sound and accurate training are as fixed as natural laws and should be insistently followed. Ill considered experiments and indiscriminate methodizing should be abandoned and attention devoted to the persevering and continuous drill necessary for accurate and efficient training; and we hold that no course of study in any public school should be so advanced or so rigid as to prevent instruction to any student who may need it in the essential and practical parts of the common English branches.

3. We assert that the individuality of the pupil should be carefully considered, to the end that he may be instructed in the light of his limitations and capacity; and commend to all Local Authorities the necessity of greater care in the arrangement of courses of study, that they may be adapted to the pupils to be instructed, rather than that pupils should be adapted to fixed courses of study and inflexible systems of grading.

4. There is concededly a grave moral depression in our business and social atmosphere. The revelations of the financial and legislative world for the past two years denote a too general acquiescence in questionable practices and standards. We earnestly recommend to Boards of Education, principals and teachers, the continuous training of pupils in morals, and in business and professional ethics, to the end that the coming generation of men of affairs may have a well developed abhorrence of unfair dealing and discrimination. The establishment of the honour system in schools, the ostracism of the dishonest or unfair pupil, the daily exemplification in the routine life of the school of the advantage of honest and truthful methods, are commended to the especial attention of teachers as a partial means to this end.

5. The Bureau of Education at Washington should be pre-

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served in its integrity and the dignity of its position maintained and increased. It should receive at the hands of Congress such recognition and such appropriation as will enable it not only to employ all expert assistants necessary, but also to publish in convenient and usable form the results of investigations, thus making that department of our government such a source of information and advice as will be most helpful to the people in conducting their campaigns of education. We are of the opinion that the importance of the subject under its control, and the dignity of this country require that this bureau be maintained as an independent department of the Government.

6. The National Education Association notes with approval that the qualifications demanded of teachers in the public schools are increasing annually, and particularly that in many localities special preparation is demanded of teachers. The idea that any one with a fair education can teach school is gradually giving way to the correct notion that teachers must make special preparation for the vocation of teaching. The higher standard demanded of teachers must lead logically to higher salaries for teachers, and constant efforts should be made by all persons interested in education to secure for teachers adequate compensation for their work.

7. It is the duty of the State to provide for the education of every child within its borders and to see that all children obtain the rudiments of an education. The constitutional provision that all tax-payers must contribute to the support of the public schools logically carries with it the implied provision that no persons should be permitted to defeat the purposes of the public-school law by forcing their children at an early age to become bread-winners. To this end the child labour and truancy laws should be so harmonized that the education of the child, not its labour, is made the chief concern.

8. The National Education Association endorses the increasing use of school buildings for free vacation schools and for free evening schools and lecture courses for adults and for children who have been obliged to leave the day school prematurely. We also approve of the use of school grounds for playgrounds and the use of school gymnasiums and bath-rooms for the benefit of children in the crowded districts during summer.

9. Local taxation, supplemented by State taxation, presents the best means for the support of the public schools and for securing that deep interest in them which is necessary to their greater efficiency. State aid should be granted only as supplementary to local taxation, and not as a substitute for it.

10. The National Education Association observes with great satisfaction the tendency of cities and towns to replace large School Committees or Boards which have exercised through Sub-Committees executive functions, to salaried experts.

11. We cannot too often repeat that close, intelligent, judicious supervision is necessary for all grades of schools.

12. The rapid establishment of rural high schools and the consolidation of rural district schools are most gratifying evidences of the progress of education. We believe that this movement should be encouraged until the children of rural communities enjoy the benefits of public education to an extent approximating as nearly as practicable the education furnished in urban communities.

13. The National Education Association wishes to record its approval of the increasing appreciation among educators of the fact that the building of character is the real aim of the schools and the ultimate reason for the expenditure of millions for their maintenance. There are in the minds of the children and youth of to-day a tendency toward a disregard to constituted authority, a lack of respect for age and superior wisdom, a weak appreciation of the demands of duty, a disposition to follow pleasure and interest rather than obligation and order. This condition demands the earliest thought and action of our leaders of opinion and places important obligations upon School Boards, superintendents, and teachers.

14. The National Education Association wishes to congratulate the secondary schools and colleges of the country that are making an effort to remove the taint of professionalism and other abuses that have crept into students' sports. This taint can be removed only by leading students, alumni, and school faculties to recognize that inter-school games should be played for sportsmanship and not merely for victory.

15. It is apparent that familiarity with the English Bible as a masterpiece of literature is rapidly decreasing among the pupils in our schools. This is the direct result of a conception which regards the Bible as a theological book merely, and thereby leads to its exclusion from the schools of some states as a subject of reading and study. We hope for such a change of public sentiment in this regard as will permit and encourage the reading and study of the English Bible as a literary work of the highest and purest type, side by side with the poetry and prose which it has inspired and in large part formed.

16. It is important that school buildings and school grounds should be planned and decorated so as to serve as effective agencies for educating not only the children, but the people as a whole in matters of taste. The school is becoming more and more a community centre, and its larger opportunities impose new obligations. School buildings should be attractive as well as healthful, and the adjourning grounds should be laid out and planned with appropriateness and beauty.

17. The highest ethical standard of conduct and of speech should be insisted on among teachers. It is not becoming that commercialism or self-seeking should shape their actions, or that intemperance should mark their utterances. A code of professional conduct clearly understood and rigorously enforced by public opinion is being slowly developed, and must one day control all teachers worthy of the name.

18. In teaching, as in other kind of work, the best service is secured by finding the individual best fitted to the particular place as indicated by training, experience, and meritorious service; the National Education Association therefore heartily approves a merit system of promoting teachers and filling vacancies. We assert, furthermore, that the grounds upon which a teacher may apply for a position are preparatory training, experience, and meritorious service—in a word, professional fitness alone; and that the use of other personal and political arguments is deplorable in the teacher and a serious menace to a high professional standard.

Resolved also, That public high schools should not be chiefly fitting schools for higher institutions, but should be adapted to the general needs, both intellectual and industrial, of their students and communities, and we suggest that the higher institutions might wisely adapt their courses to this condition.

And we also suggest to School Boards and superintendents the importance of securing for their high-school teachers who have not only abundant scholarship but also successful experience in teaching or efficient and practical training in pedagogy.

The foregoing principles and aims and the subsequent resolutions have been fully considered by the committee and unanimously adopted.

SCIENTIFIC METHOD IN THE STUDY OF EDUCATION.

By Prof. J. J. Findlay, M.A., Ph.D., and P. Sandiford, M.Sc.

(Summary of a paper read before the British Association at Dublin, a sequel to a paper read at the York Meeting of the British Association. *Vide* "Transactions," 1906, page 793.)

In the paper presented at York, Mr. Findlay confined his attention to experimental studies in school *teaching*, and indicated the lines on which he and others were at work in demonstration schools,* associated with Departments of Education or training colleges. The time now seems ripe for a wider review of methods for the improvement of education which, in a broad sense, may be described as "experimental" or "scientific": experiments in teaching form only one section of a large field which is being tentatively worked in many parts of the world.

1. A first group consists of investigations which do not directly raise questions of education at all, but are concerned solely with the physical powers of childhood and their development; they are really questions of physiology and hygiene—a branch of anthropometry. To these may be added inquiries into feeding, clothing, sleep, &c. It must be borne in mind that while such inquiries are invaluable as material for educational proposals, they are not of themselves directly of service, and the interpretations put upon them are often wide of the mark; for the school is a social organization which has to do its work under complex social conditions.

2. Allied to the above may be placed investigations into school appliances and the physical conditions under which children live while at school. This is a branch of public sanitation rather than distinctively a matter for pedagogics.

3. The third group is concerned with the organs of sense,

* Some of the results of the work in Manchester, as well as an account of the methods employed, are to be found in the *Demonstration School Record*, No. 1. (University Press, Manchester, 1908.)

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eyesight, hearing, &c.; and we are still in regions where the physiologist and the physician are at home rather than the teacher. Their results need to be handed over for the use of schools, but the methods and processes of research are not a distinctive concern for the teacher.

4. A fourth group carries us forward to experimental psychology, to research in which the methods of the psychological laboratory are applied to the features of the growing organism as distinguished from the adult.

A large mass of very suggestive research has been undertaken, of which the work on "Fatigue" may be taken as typical. The most recent results show the grave difficulties encountered in endeavouring to interpret physical conditions in terms of mind (see Ellis and Snipe, *American Journal of Psychology*, 1903, page 232).

Experimental psychology, when the subjects of an experiment are children, undoubtedly would appear to have a close bearing upon the problem of the teacher, and a good deal of the work undertaken in Germany under the title of "Experimentelle Pädagogik" (see Schwarz in *School Review*, Chicago, January to September, 1907) shows that many investigators would desire to see stations for research in genetic psychology established as part of the equipment of Departments of Education.

It would appear, however, as if the methods of the psychological laboratory are too specialized, and too remote from the positive functions of the school, to be introduced as part of the pedagogical equipment of a University. Rather one would say that such a laboratory ought *to be at hand* wherever advanced work in the study of education is set on foot; and the psychologist ought to be asked to pay special attention to genetic studies in view of the practical importance of any results which he may reach. It is certain that if the laboratory can arrive at new conceptions of the mental life of the young, these results will find an immense field for application in the teaching profession.

5. Of an entirely different order are the numberless investigations conducted under the name of child study, especially in America by Stanley Hall and Earl Barnes, and more recently in Germany by Kerchensteiner and others. Here the investigator deals with experience, with mental "content" in ideas and feelings, or output in expression, rather than with mental qualities or faculties. These investigations, when conducted with real scientific ability, have greatly influenced the schools, for the teacher's business is directly concerned with the child's output—the fundamental difficulty felt by the psychologist as to the nature of mind process is largely avoided when attention is confined to achievement.

6. All the above groups are conducted on well recognized lines of control experiments, with quantitative measurements. But they only bring us to the threshold of the school; experiments which touch directly the business of the teacher encounter several difficulties—(1) they need a long period of time for their completion; (2) disturbing and qualifying factors are always presented, and cannot easily be reckoned with; (3) methods for estimating results have scarcely as yet been seriously considered. Such methods must obviously vary for each branch of instruction or school management. Both in the selection of the material of a curriculum, in methods of teaching, and in the corporate life of school a great amount of experimental work is being undertaken, but it can seldom hope to be placed on the same footing as regards exactness such as is attained in the earlier groups. Further, such work can seldom be undertaken without some *a priori* bias of general principles as to the underlying aim and function of the school.

It is, however, in this group that the proper business of a Department of Education centres; and it is here that the scientific attitude is most urgently needed by demonstrators and instructors. Material, Method, Corporate Life—each of these three sections—can be treated from the standpoint of scientific method. One of the pressing problems for investigation is to consider the principles on which results can be tested: here we should refer to a remarkable inquiry conducted in American cities by Dr. Rice (published in the *Forum*, from January, 1901, to 1902). Our English examining bodies collect every year a large mass of material which could be utilized to capital advantage for research, if means were at hand.

8. This leads us to a final group which takes the student outside the school walls—the administration and control of educational institutions. Here we have a field in which the methods of political science offer the model.

This cursory sketch serves to indicate the vast field that lies before the teaching profession when the time comes for the teacher to be trained on lines which demand an approach to scientific method. There are some signs that the Government, which controls so intimately the training of teachers, is beginning to realize its responsibility to take the lead in this work, by affording means to Universities and training colleges to make a beginning; the Education Bill of 1906 contained a clause on behalf of Demonstration Schools. But a fully equipped Department of Education in a University would be at least as costly to maintain as a medical school. It may be worth while for this Association to set on foot some means for collecting information as to the extent to which work is being attempted (either in Departments of Education or in schools) of a quality that can make pretensions to be regarded as scientific.

REVIEWS.

SECONDARY INSTRUCTION: STUDIES AND PROCESSES.

Principles of Secondary Education. A Text-book. By Charles De Garmo, Professor of the Science and Art of Education, Cornell University. Vol. I.: *The Studies.* (5s. net.) Vol. II.: *Processes of Instruction.* (4s. 6d. net.) (Macmillan.)

Prof. De Garmo here presents "an initial statement" of "the fundamental principles of American secondary education," discussing the curriculum in the first, and the problems of method in the second, volume. "The Processes of Training" are reserved for a third volume. The appendixes to the first volume, covering 79 pages are exceedingly instructive to the student of curricula, who will find in them material for the prosecution of inquiries outside the author's limits. They include many typical courses of study, both European and American; and it is interesting to note the large proportion of time devoted to literary subjects by the American secondary schools, here termed "Manual Training High Schools." In both volumes there is a liberal provision of "Topics for Discussion," which are intended to be treated as exercises performed in class. This excellent feature of a college text-book is occasionally marred in the present case by a certain pretentiousness in some of the topics proposed: a thorough, or even a fruitful, discussion of these would be beyond the knowledge and ability of the persons for whom most of the book appears to be written.

Judging it from a purely British point of view, the book must be pronounced disappointing; there is a lack of proportion in treatment, in consequence of which some parts are needlessly inflated and others unduly contracted. The "Introduction—Presuppositions underlying American Secondary Education," raises the thorny questions which centre round the mutual relations of the individual and the community; these problems are fundamental, yet they are dismissed in fourteen pages. Such compression not only courts defeat, but plays into the hands of that numerous and most mischievous class of "educationists" who are ever on the look-out for generalizations that cost them nothing for the making. One would have preferred in this "Introduction" a reasoned statement at some length of the principles which the author conceives to lie at the base of all courses of study pursued for strictly educational purposes. Such a statement is not supplied, either as a set of deductions *a priori* or as the outcome of a minute study of some sufficiently well established curricula. Accordingly, when we come to chapter v., "The Organization of Studies and Curricula," the treatment is elusive and unconvincing, because it wants the guidance of a few master principles clearly formulated. We are told that the pupil "must recapitulate in a brief time at least an epitome of the acquisitions of the race" (II. 69), but we are left to wonder why he must, and no notice is accorded to the objection that he can't.

The greater part of the first volume is occupied in considering the educational value of the branches of study followed in the secondary schools of America. While the author is willing to concede a restricted and not very considerable value to "mental discipline" or "formal training" as a factor in the worth of any given study, he takes what seems to be the thoroughly sound position that it is specific content which makes any branch of human attainment valuable or not as a school "subject." Studies are classified under the three great heads: Natural Sciences, Humanities, and Economic Science—the last being an *omnium gatherum* betokening a breakdown in the classification. With reference to the first two groups, Prof. De Garmo's position will perhaps be fairly described as being in the "left centre" of

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orthodoxy: he assigns a much greater value to the study of foreign languages, ancient as well as modern, than is commonly conceded by American writers on education. With admirable courage, he quotes the opinion of the Prussian Commissioner who saw the outcome of transatlantic Latin teaching in "the proud inscription, 'Per Pacem ad *Libertas*' (*sic*) in one of the principal rooms of the Philippine exhibit at St. Louis."

Prof. De Garmo's third or "Economic" group of studies includes commercial geography and history, "economic physics, chemistry, and biology," mechanical drawing, manual training, housewifery, book-keeping, typewriting, shorthand. Whereas the studies of the former groups are canvassed at great length, the specific values of this economic group are considered in less than ten pages. It is commonly understood that America is rapidly and successfully developing the more educational side of "bread studies," thus establishing what is styled "vocational education." Brevity on such a matter is particularly disappointing to the foreign student of the process. The inclusion in secondary-school courses of some of the so-called "bread studies" is a necessity of modern life, justified not only by material advantage, but also by the principle that a school course ceases to educate when it gets out of touch with life beyond the school walls. But their inclusion is surrounded by very real difficulties. While the studies themselves are in most cases not yet sufficiently defined and systematized to serve as instruments of education, the men and women who can employ them in that capacity are few in number. There is therefore a demand for a broad and deep discussion of the principles which must govern the educational use of this economic group of studies; but the author does not give it attention. It will not do to accept these studies as "of course": the consequence of that attitude is the plethoric curriculum so familiar in Europe.

Save for a much needed and most useful statement discriminating between the positions of the researcher and the schoolboy (pages 67–78), the second volume is little more than a reiteration of what is found in any modern text-book of inductive logic. One sympathizes with the desire to reinstate logic in that high place in method from which so many books on teaching have tried to depose it. But, if educational method is no more than can be found in the logical text-book, why the volume under review? It is extraordinary to find no specific presentment of mental processes as such in a book bearing the title "Processes of Instruction." The author's own statements *passim* lead us to expect some notice from him of the psychological side of the instructor's problem. Thus he speaks of "the mastery of a system of thought" (II. 158), but devotes no space to the consideration of the nature and growth of such a system. He insists that every study has a twofold aspect—first, as "knowledge," which gives insight, and second as "technique," or practical application, which gives efficiency. He deprecates the consideration of any studies as being specifically forms of skill, on the ground that such a conception of them would "obscure the organic nature of the curriculum" (I. 139), and "would wholly fail to account for its modern developments" (165). But this is little to the point so long as these very developments lack that full consideration of whose absence we have complained above. We look in such a book as the present for some treatment of the psychological questions which the instructor must answer, whether he is helping his pupil to acquire insight or efficiency. It does not avail to say (II. 152 ff.) that the psychologist is interested in the individual, whilst education is primarily social or sociological. Prof. De Garmo himself declares, on his very first page, that "in education what is best for the individual is also best for society." The instructor, therefore, must have an eye to the individual pupil, and to do this he must take into account factors other than the logical. While this is true both in teaching which aims at knowledge and in teaching whose purpose is skill, it is especially necessary in the latter case. Possibly the psychological treatment of the processes of instruction is reserved for the third volume. If so, the order of presentation appears to us to be faulty.

The press-work and general "get-up" of these volumes are very good. We have noted a few misprints, in proper names chiefly—some of them not readily excusable.

Mr. Hall Caine's Reminiscences.

My Story. By Hall Caine. (6s. Heinemann; for Collier & Co., 2 Tudor Street, E.C.)

In this volume Mr. Hall Caine does not present a regular and complete account of his career. He speaks of the work as an "autobiographical fragment." It is mainly concerned with his literary relationships during the earlier half of his life, and especially with D. G. Rossetti. The first part contains a sketch of his childhood and youth in the Isle of Man, "partly for the sake of the picture it must needs present of a curiously self-centred little community that was strangely out of touch and harmony with the rest of our kingdom as recently as half a century ago, and partly, perhaps, for such interest as it might possibly possess for some of the readers of the novels with which my name is associated." It contains also a slight account of his early days in Liverpool (where the home of his parents was) and of his first literary friends (among them Ashcroft Noble and William Watson), and of the steps leading up to his acquaintance with Rossetti. The main interest of the book is centred in the second part, which recounts pretty fully his association with Rossetti—"the story of that friendship, the greatest, the most intimate, the most beautiful that has ever come to me," and probably the most painfully trying. It is a pitiful story indeed, and one that need not have been told at all but for the prevalence of other versions less creditable to the author's friend. It appears, then, that Rossetti's gloomy solitude was not "the result of morbid brooding over the insults of adverse critics," but of "a deep-seated and wholly unnecessary sense as of a curse resting on him and on his work, whereof the malignancy of criticism was only one of many manifestations." It was, in fact, the result of "remorse, not perhaps for any unkindness, any want of attention, still less any act of infidelity on his part, but for the far deeper wrong of failure of affection for the one being to whom affection was due." To Mr. Hall Caine's mind, this revelation

> lifted him [Rossetti] entirely out of the character of the wayward, weak, uncertain, neurotic person, who could put up a blank wall about his existence because his wife had died by the accident of miscalculating a dose of laudanum; who could do a grave act and afterwards repent of it and undo it [that is, the burial of the manuscript poems in his wife's coffin]; who could finally shut himself up as a hermit and encourage a hundred delusions about the world because a rival poet resented his success. Out of this it raised him into the place of one of the great tragic figures of literature—one of the great lovers whose lives as well as their works speak to the depth of their love or the immensity of their remorse.

It will not be easy for every reader to enter into this view of the matter. The drugs have much to account for, and the absence of fresh air and of a circle of non-worshipping friends. In any case, the description presented by Mr. Hall Caine is sufficiently painful and repulsive. The Third Part consists of fragmentary notes about Ruskin, Buchanan, Blackmore, and Wilkie Collins, and about the author's first essays in journalism, in fiction and drama, his visits to America, and his general reflections on the literary life. The substantial part of the book is the detailed account of the author's association with Rossetti; the rest does little more than fill out the proportions of the volume. The style is generally simple and agreeable, and, though the author writes in the first person and of himself, he is not by any means unduly self-regarding.

A Mathematical Miscellany.

A Scrap Book of Elementary Mathematics. By William F. White, Ph.D. (5s. net. Chicago: Open Court Publishing Company. London: Kegan Paul, Trench, Trübner, & Co.)

Beneath a modest title, which, however, in a great measure, accurately defines the nature of the materials of Dr. White's work, the volume before us contains a wealth of interesting facts, some serious and of great educational value, others useful and suggestive and culled from the stores of the history of mathematics; others, again, are scraps dealing with the science in its lighter vein, as it appears in the form of puzzles. Those readers are many and of varied tastes who may take up the volume and expect to meet with what each, in turn, will find personally attractive. The opening sections deal with topics calculated to interest students of the higher arithmetic and the theory of numbers. We give one example only in mentioning that the author, in one of his chapters, draws attention to numbers that, when multiplied, by successive integers reproduce, in general, the same series of digits arranged in cyclic order: *in general*, for the multipliers giving exceptional results, together with the reason of the peculiarities observable, are duly indicated. In connexion with this portion of his subject, the author expresses indebtedness to a mathematician whose name is well known to some of our readers, namely, Prof. E. B. Escott.

Excellent sections treat of the trends of arithmetic at the

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present time, amongst others the gradual, but sure, tendency in our day towards decimalization in Arithmetic. The author, however, does not fail to comment on the intrinsic superiority of 12 over 10 as the radix of notation, if only some mighty intellect, far in advance of his time, had been present to influence our forefathers when making and developing their choice. The chapter avowedly on *multiplication* of decimals, but dealing also with *division*, is interesting both in its educational and in its historical aspect, whilst, from the historian's point of view, the pages which touch on the arithmetic of the Renaissance are valuable, though confined to a few notes. Teachers will probably be helped by Dr. White's investigation of the true relation which exists between axioms regarding equality and algebraic equations, and some, perhaps, will be grateful to him for the illustrative examples by which he proves the truth of his tenets: further, his notes on the true principle of useful checking and on other important points in elementary work are worthy of careful attention. The sections on pure geometry touch on the postulates connected with the theory of parallels, on various puzzles of a geometrical character, and on the celebrated problems of antiquity, namely, the trisection of an angle or arc, the duplication of the cube, and the squaring of the circle. Also, there is a brief reference to the geometry of the triangle and its allied points and circles. It is impossible to accompany Dr. White through all his sections in the course of a brief review, but no study of his book would be complete that did not point out the following pages and chapters. Historically interesting is the page of reproductions of specimens of the autographs of famous mathematicians. Educationally valuable is the consideration of "Mathematical Recitation as an Exercise in Public Speaking." Deeply inspiring notes are struck in the chapter on the nature of mathematical reasoning, whilst the sequel to Alice's Adventures in Wonderland as told by Dr. White in "Alice in the Wonderland of Mathematics" is graceful, imaginative, and delightful. In conclusion, the book is well worth reading, and many who read it will, we think, wish to possess it for the sake of some at least of its pages.

GENERAL NOTICES.

CLASSICS.

The Comedies of Terence. Edited by Sidney G. Ashmore, L.H.D., Professor of Latin in Union College, Schenectady, N.Y. (6s. Oxford University Press, American Branch.)

Prof. Ashmore adopts substantially Prof. Tyrrell's Clarendon Press text ("Scriptorum Classicorum Bibliotheca Oxoniensis"), not merely because the publishers naturally desired to have their own text annotated, but "owing chiefly to the conviction that Dziatzko's text is, on the whole, inferior." Dziatzko did great things for the text, and it is no discredit to him if a successor make further improvements; what is more surprising is that an American scholar should stand clear of his colleagues "who imagine that no good critical text of an ancient classic can come out of England"—which is nowadays to imagine a vain thing. Prof. Tyrrell's brief critical apparatus is given at the foot of the page, and is very usefully supplemented by Prof. Ashmore's critical appendixes. An extensive introduction explains and discusses in every important aspect the history of ancient comedy, with special attention to Terence—a very instructive and convenient essay. In the notes, Prof. Ashmore makes Terence his own commentator, as far as possible; but he has, of course, availed himself of the current literature on Terence, as well as of much of the literature on Plautus. In the explanation of the Latin, the notes are usually concise and pointed; the legal expressions miss treatment from a scholar that knows the familiar original sources—a strangely common failing in editions of literary classics. Thus, "hanc mi in manum dat" (Andr., ii. 3 [i. 4]) is slurred over, and the technical expression (which is not in question here at all) is treated inadequately, and even misleadingly. The references to American grammars and journals constitute a certain drawback to the utility of the edition on this side of the water, but that may be got over easily. The treatment is sincere and capable (with the limited exception indicated), and the work will be very welcome in schools where Terence is read. The typography of the Riverside Press needs no commendation.

Select Epigrams of Martial: Spectaculorum Liber and Books I.–VI. Edited from the text of Prof. Lindsay by R. T. Bridge, M.A., and E. D. C. Clarke, M.A., Assistant Masters at Charterhouse. (Clarendon Press.)

The editors have done well in accepting the text prepared by Prof. Lindsay, apart altogether from its place in the publishers' series of Oxford Classical Texts. The introduction furnishes a connected account of features of Roman life that are constantly emerging in the epigrams

(*Continued on page 74.*)

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—patron and client, legacy-hunting, recitations, books, &c.—as well as a sketch of Martial's life and of his handling of the epigram, and an account of the public spectacles. The notes are concise: they are mainly directed to elucidation of the thought and point of the epigrams, but real difficulties in the Latin are not left unexplained. Proper names are fully dealt with in a special index. The volume is very carefully and ably edited, and will be welcomed in the upper forms of schools. We noticed the second volume—Books VII.–XII. —in April, 1907.

The Year's Work in Classical Studies, 1908, edited by W. H. D. Rouse, M.A., Litt.D., Head Master of the Perse Grammar School, Cambridge (2s. 6d. net, John Murray), furnishes a very convenient and most useful record. There are eighteen chapters dealing with the progress of classical study in as many different spheres: classical work in the schools, excavations in Greece and Italy, archæology, history, grammar, palæography, sculpture, numismatics, religion, literature, New Testament, &c. The only subject conspicuous by its absence is Law—not the least important of classical subjects, though too often unsatisfactorily treated in editions of classical texts. Much of the matter is very condensed, indicative rather than explanatory; but the foot-note references come to the rescue, and we hope that the editor will be encouraged, before many more annual issues (this is the third only), to allow his contributors to be more expansive.

MATHEMATICS.

A New Geometry for Middle Forms. By S. Barnard, M.A., and J. M. Child, B.A., B.Sc. (3s. 6d. Macmillan.)

We have in the past had occasion to notice very favourably the treatise written by the above-named writers and entitled "A New Geometry for Schools"—a work subsequently divided and issued, together with a treatment of the subject of solid geometry, in two volumes, namely "A New Geometry for Junior Forms" and "A New Geometry for Senior Forms." The present publication contains all that is to be found in the text-book for junior pupils and also a portion of what is included in the volume for the senior forms. Hence the treatise now before us is medium in its character. Including as it does the subjects treated by Euclid in his first four Books, it may be used as an excellent text-book for examination purposes by candidates reading for University of London Matriculation or preparing for the Oxford and Cambridge Junior Locals and examinations of like standard. The work is published in very serviceable form.

Geometry, Theoretical and Practical. Part II. By W. P. Workman, M.A., B.Sc., and A. G. Cracknell, M.A., B.Sc., F.C.P. (2s. Clive.)

Part I. of this publication came before our notice a considerable time ago, and, as a text-book which combined some of the best features of the old and the new systems of teaching geometry, the work attracted very favourable notice. Part II. of the treatise is a fitting sequel to the more elementary volume and deals (1) with the theory of areas which forms the subject of Euclid's Second Book and the end of his Third Book, (2) with the principal propositions on regular polygons, (3) with the theory of ratio, proportion, and similar figures, and (4) with more modern topics: *e.g.*, inversion, harmonic section, and centres of similitude. The subject of rectangular areas is treated both by pure geometry and by algebraic methods, and, although the discussion by either is in itself sufficient, the writers strongly recommend that those who use the text-book should study both. Euclid's treatment of ratio and proportion gives place to a consideration based solely on the arithmetical definition of a ratio and its application to commensurable quantities; but, for the sake of completeness, a chapter on irrational numbers is introduced at the close of the volume. The demonstrations are clear and satisfactory and are fully illustrated by neat diagrams.

Preparatory Mathematics. By A. Clement Jones, M.A., Ph.D., and C. H. Blomfield, M.A., B.Sc. (1s. 6d. Nelson.)

The ideas that form the basis of this little volume of exercises are useful and practical. The main subject treated is arithmetic, but a first introduction to algebra and elementary geometry finds place here also, and supplies the teacher with the means of co-ordinating in his lessons the various branches of preliminary mathematics. Whilst providing a general syllabus in accordance with which the course of instruction may be arranged, the authors have grouped the exercises as far as possible with respect to difficulty, and with little regard for definite order of study. The plan has been adopted with a view to training the pupil to be thoughtful and self-reliant, and not to judge what rule is required for the working out of a particular exercise from the position of the latter in his book. A valuable principle also underlies the endeavour to lead up informally to a fresh subject, so that the pupil may not approach his serious work on new material without having first become more or less familiar with its ideas and its terminology. The lines on which the volume is written agree with rather than follow the suggestions of the British Association Special Committee, since the reader learns from the preface that the work was well in hand before the Report of the Committee was issued.

SCIENCE.

Examples in Elementary Mechanics: Practical, Geographical, and Theoretical. By W. J. Dobbs, M.A., sometime Foundation Scholar of St. John's College, Cambridge. (5s. Methuen.)

The volume is "designed to cover the ground of an elementary course without the use of an accompanying text-book." The text-book is dispensed with by the insertion of brief and pointed explanations and of fully worked examples. The examples are abundant and varied and they are very carefully graduated. The practical exercises requiring the use of apparatus (of the simplest description) are designed "either for the purpose of driving home some definite principle or as requiring the use of such a principle for their interpretation." The work has been compiled with great labour and care, and cannot fail to be most valuable in practice, whether with or without a text-book. Answers are appended, and there are fifty-two diagrams.

The Principles of Mechanics. For Students of Physics and Engineering. By Henry Crew, Ph.D., Fayerweather Professor of Physics in North-Western University. (6s. net. Longmans.)

Prof. Crew assumes a previous course of general physics and a course (either concurrent or antecedent) in the Calculus. Confining the treatment to such part of the subject as is common ground for the physicist and the engineer, he "builds the discussion upon a few simple experiments and upon definitions which convey at once the physical meaning of the quantities defined"; and, to reduce the inherent difficulties to a minimum, he "treats dynamics in two analogous parts, rotational and translational, such that if either one is given the other may be immediately deduced." A very interesting chapter is devoted to some applications of general principles to special problems. The last chapter treats of "Fluid Motion." The handling is simple and perspicuous; problems and exercises are furnished; and there are 110 figures.

First Course in Biology. Part I., Plant Biology. By L. H Bailey. Part II., Animal Biology, and Part III., Human Biology. By Walter M. Coleman. (Macmillan.)

This volume does not seem to fit into English school biological teaching so well as into the newer American arrangements for which it is primarily designed. "In the natural science field," we learn, "the tendency is to attach less importance to botany and zoology and physiology as such, and to lay greater stress on the processes and adaptations of life as expressed in plants and animals and men This tendency is a revolt against the laboratory method and research method of the college as it has been impressed into the common schools." The treatment accordingly reverts, in the main, to descriptive and observational methods, with a constant purpose of applying the lessons to daily life. "The very reason for knowing plants and animals is that one may live with them, and the reason for knowing oneself is that he may live his daily life with some intelligence." Hence in the third part there is a good deal of matter that one usually finds in books on hygiene. "The book stands between the unorganized Nature study of the intermediate grades and the formal science of the more advanced courses," and certainly it contains a large amount of very useful information and suggestion. There are 302 + 408 + 132 figures.

The Young Engineer; or, Modern Engines and their Models. By Hammond Hall. (5s. net. Methuen.)

Mr. Hall mostly leaves to Dr. Smiles and other popular writers the story of the early years of the steam engine, and restricts himself as closely as possible to giving a clear outline of the principles of modern engine practice. Having set in order the workshop and its furniture, he describes the steam engine in its various forms and the locomotive engine; shows how to make and run model locomotives ("the most fascinating" of all branches of model engineering, "and the one requiring the greatest amount of skill and technical knowledge"); and then deals with marine engines (the designs for which "illustrate the most remarkable applications of the inventive genius of the mechanic, the greatest talent of the designing engineer, and the best work of the engine builder"), the steam turbine, steam generators, models, and so forth. A boy with a mechanical turn will catch Mr. Hall's enthusiasm and get absorbed in his patient and lucid description of machinery and its working. There are eighty-five illustrations.

HISTORY.

The Development of Modern Europe: an Introduction to the Study of Current History. By James Harvey Robinson, Professor of History, and Charles A. Beard, Adjunct Professor of Politics, in Columbia University. Two volumes. (6s. 6d each. Ginn.)

The authors believe that, "in general, Europe of to-day can be quite well understood if the wonderful achievements since the opening of the eighteenth century are properly grasped." Accordingly, they start from Louis XIV. and the reconstruction of Europe at Utrecht; and the first volume goes down to the reconstruction at the Congress of Vienna, the second continuing the history to the present day. The standpoint is the present, and the past is treated so as to furnish the explanation of how the present has been evolved out of it. Occurrences that appear to have been of merely temporary prominence have been omitted as not relevant to the specific purpose of the work. The dependence of the nineteenth century upon the eighteenth is emphasized: "it was the eighteenth century which set the problems of progress and suggested their solutions, leaving to its successor the comparatively simple task of working them out in detail and making fuller application of them." There is somewhat of strain in this way of characterizing the two periods, but in any case it is well to lessen the break between the centuries that has usually been made by the date 1789. The political and military events are allotted a markedly reduced space, in order to make room for a more generous treatment of the more fundamental economic matters: "the industrial

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revolution, commerce and the colonies, the internal reforms of the European States, even the general advanced science, have all, so far as possible, been given their just due." In such a large field the selection and the handling of topics must be severely limited, but the authors rely for amplification and enlivenment upon the current use of "Readings in Modern European History," a collection that "follows the narrative chapter by chapter and furnishes examples of the stuff of which history is made." We have not seen these "Readings," but no doubt they are analogous to certain volumes of representative extracts that are familiar to us—extremely useful adjuncts to historical study in schools. Here and there the narrative suffers from compression, and sometimes one feels that the outlook is not exactly from the English standpoint; but these are trifles in view of the clear and fluent presentation generally characterizing the work, which is very ably and judiciously executed. The maps constitute a valuable feature: the first volume has 22 and the second 15. There are 21 illustrations (6 in the first volume and 15 in the second), a dozen of them being full-page portraits of men of eminence in various departments of public usefulness. The volumes are well printed and strongly bound.

Messrs. Hodder & Stoughton issue a very handy and agreeable popular edition of *A Short History of Social Life in England*, by M. B. Synge, F.R.Hist S. (3s. 6d.). It is a most interesting "sketch of the material conditions in which our ancestors lived. It is pre-eminently a book of detail: it presents a brief glimpse of "their houses, their food, clothes, manners, punishments, of their wives and children, of their gardens, their education, with some account of the social changes that have taken place throughout the ages." The volume, though of independent interest, should be read in conjunction with the ordinary history, the outlines of which it, of course, presupposes.

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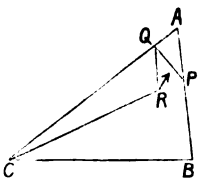
MATHEMATICS.

16471. (V. Daniel, B.Sc.)—A line CPQR ... is drawn from one angle of a triangle, as in the figure, each $(n+2)$-th portion terminated by the n-th portion, and is such that the ratio in which each portion of the line divides the angle from which it starts is alternately $\tan^2\alpha$ or $\cot^2\alpha$, α being a constant. If θ_n denote the n-th angle so divided, and ϕ_n its complement, show that



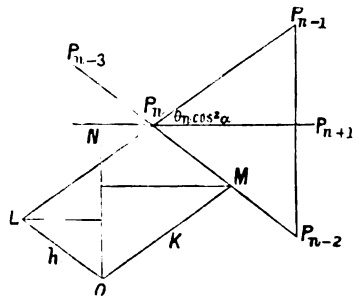
(1) $\phi_x = 0$,

(2) $p_n \sin\theta_n = p_{n-1}\sin(\theta_n\cos^2\alpha) - p_{n-3}\sin(\theta_n\sin^2\alpha)$,

where p_n is the perpendicular from C on the n-th portion of the line. Will any solver contribute a method of determining the co-ordinates of the limiting point?

Solution by M. T. Naraniengar, M.A.

Let P_nP_{n+1} be the n-th portion of the line. Draw OL, OM parallel to the lines containing θ_n, and ON perpendicular to P_nP_{n+1}. Then, obviously,



p_n = ON = sum of the projections of OM, MP_n

$= K\sin(\theta_n\cos^2\alpha) + h\sin(\theta_n\sin^2\alpha)$.

But $p_{n-1} = h\sin\theta_n$

and $p_{n-3} = K\sin\theta_n$.

Hence

$$p_n\sin\theta_n = p_{n-3}\sin(\theta_n\cos^2\alpha) + p_{n-1}\sin(\theta_n\sin^2\alpha).$$

With a convention of signs as regards the perpendiculars (as in Statics), we see that $p_{n-1} = +$, $p_n = -$, and $p_{n-3} = -$; therefore the above relation may be written

$$p_n\sin\theta_n = p_{n-3}\sin(\theta_n\cos^2\alpha) - p_{n-1}\sin(\theta_n\sin^2\alpha).$$

Note.—The Question requires modification accordingly.

The following Solution is due to the Proposer.

(1) Abbreviating $\cos^2\alpha$ and $\sin^2\alpha$ to c^2 and s^2, we have by external angle property $\pi - \theta_n = \theta_{n-1}c^2 + \theta_{n-2}s^2$

alternating c^2 and s^2 for odd and even values of n.

Therefore $\phi_n + \phi_{n-1}c^2 + \phi_{n-2}s^2 = 0$,

$\phi_{n-1} + \phi_{n-2}s^2 + \phi_{n-3}c^2 = 0$,

$\phi_{n-2} + \phi_{n-3}c^2 + \phi_{n-4}s^2 = 0$;

therefore $\phi_n + (1-c^2s^2)\,\phi_{n-2} + c^2s^2\phi_{n-4} = 0$;

therefore $\phi_n - \mu\phi_{n-2} = \lambda(\phi_{n-2} - \mu\phi_{n-4})$,

$\phi_n - \lambda\phi_{n-2} = \mu(\phi_{n-2} - \lambda\phi_{n-4})$,

where μ and λ are the roots of $x^2 + (1-c^2s^2)\,x + c^2s^2 = 0$;

therefore $\phi_n - \mu\phi_{n-2} = \lambda^{\frac{1}{2}n}(\phi_0 - \mu\phi_{-2})$, taking n even,

$\phi_n - \lambda\phi_{n-2} = \mu^{\frac{1}{2}n}(\phi_0 - \lambda\phi_{-2})$, ,, ,,

therefore $(\mu-\lambda)\,\phi_{n-2} = \mu^{\frac{1}{2}n}(\phi_0 - \lambda\phi_{-2}) - \lambda^{\frac{1}{2}n}(\phi_0 - \mu\phi_{-2})$.

Since $\mu - \lambda \neq 0$ and μ and λ are proper fractions, we deduce

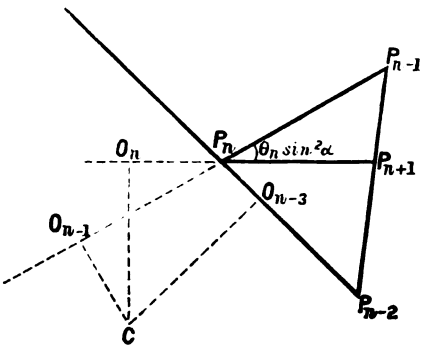
$$\text{Lt}\,[\phi_{n-2}]_{n=\infty} = 0.$$

(2) Let the "perpendicular" equations of three co-intersecting lines at P_n be $x\cos\omega_n + y\sin\omega_n - p_n = 0$, $x\cos\omega_{n-1} + y\sin\omega_{n-1} - p_{n-1} = 0$,

$x\cos\omega_{n-3} + y\sin\omega_{n-3} - p_{n-3} = 0$.

The eliminant is

$$p_n\sin(\omega_{n-1} - \omega_{n-3}) - p_{n-1}\sin(\omega_n - \omega_{n-3}) - p_{n-3}\sin(\omega_{n-1} - \omega_n) = 0.$$



Interpreting this result with the help of a figure showing the perpendiculars drawn from any origin C, we get

$$p_n\sin\theta_n - p_{n-1}\sin(\theta_n\cos^2\alpha) - p_{n-3}\sin(\theta_n\sin^2\alpha) = 0.$$

This agrees with Mr. Naraniengar's first equation, and (2) must be restated thus in the Question:

$$p_n\sin\theta_n = p_{n-1}\sin\begin{Bmatrix}\theta_n\cos^2\alpha\\ \theta_n\sin^2\alpha\end{Bmatrix} + p_{n-3}\sin\begin{Bmatrix}\theta_n\sin^2\alpha\\ \theta_n\cos^2\alpha\end{Bmatrix},$$

$\sin^2\alpha$ and $\cos^2\alpha$ being interchanged for odd and even values of n.

16524. (Professor Morley.)—A triangle sets up in its plane a Cremona transformation by taking the polar line of any point. Given in a plane a Desargues configuration (the complete figure of two perspective triangles), prove that there are ∞^2 such transformations which will send the ten points of the configuration into the ten lines on five points.

Solution by Professor Nanson.

A Desargues configuration is determined by the meets with a fixed plane ϖ of the lines and planes joining five fixed points 1, 2, 3, 4, 5 in space. Denote the point in which the join of p, q cuts ϖ by pq. Then the four points tp, tq, tr, ts and an arbitrary point L in ϖ determine a conic S_t. If x, y, z; u, v, w are the sides of the triangle 41, 42, 43; 51, 52, 53, the conics S_1, S_2, S_3 are clearly given by

$$\begin{Vmatrix} ux' & vy' & wz' \\ u'x & v'y & w'z \end{Vmatrix} = 0,$$

where dashes denote values at L. The form of these equations shows that S_1, S_2, S_3 have three points in common. Similarly, S_1, S_2, S_4 have three points in common. These two sets of common points must be identical because both are on S_1, S_2, whilst 12, one of the four points common to S_1, S_2, is not on either S_3 or S_4. Thus S_1, S_2, S_3, S_4 have three points in common, and similarly S_1, S_2, S_3, S_5 have three points in common, and as before, the two sets of common points must be identical, so that S_1, S_2, S_3, S_4, S_5 have three points in common.

Taking these three points as reference points the quadric transformation or triangular inversion

$$x' : y' : z' = yz : zx : xy$$

sends the conics S_1, S_2, S_3, S_4, S_5 into five straight lines. An interchange of point and line co-ordinates now sends these five lines into five points, and therefore sends the ten points pq into the ten lines joining five points. The two transformations make up the Cremona transformation specified, and since the point L can be taken anywhere in the plane ϖ there are ∞^2 such transformations.

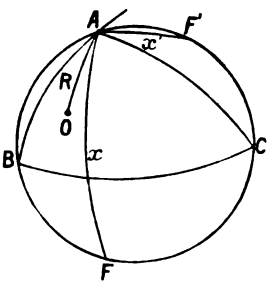
16527. (Professor Sanjána, M.A.)—The small circle described about a spherical triangle ABC meets the great circles bisecting internally and externally the angle A in the points F, F'. Prove that

$$\cot\tfrac{1}{2}FF' = \sqrt{[\cot^2 R + \tfrac{1}{4}\tan^2 R\sin^2(B-C)]},$$

and give the analogous result *in plano*.

Solution by W. Rigby, M.A.

Let O be the centre of the circum-circle of triangle ABC.



Then $\angle OAF = \tfrac{1}{2}A - (S-C)$

$= \tfrac{1}{2}A - \tfrac{1}{2}A - \tfrac{1}{2}B + \tfrac{1}{2}C$

$= \tfrac{1}{2}(C-B)$,

and $\angle OAF' = \tfrac{1}{2}(C-B) + 90°$.

Let $AF = x$ and $AF' = x'$.

Then, from triangle OAF,

$\cot R\sin x = \cos\tfrac{1}{2}(C-B)(1+\cos x)$;

therefore

$\tan\tfrac{1}{2}x = \cos\tfrac{1}{2}(B-C)\tan R$.

Similarly from triangle OAF', $\tan\tfrac{1}{2}x' = \sin\tfrac{1}{2}(B-C)\tan R$.

From triangle FAF', $\cos FF' = \cos x\cos x'$;

therefore $\cot\tfrac{1}{2}FF' = \sqrt{\left(\dfrac{1+\cos FF'}{1-\cos FF'}\right)} = \sqrt{\left(\dfrac{1+\cos x\cos x'}{1-\cos x\cos x'}\right)}$

$= \sqrt{\left(\dfrac{1+\tan^2\frac{1}{2}x\tan^2\frac{1}{2}x'}{\tan^2\frac{1}{2}x + \tan^2\frac{1}{2}x'}\right)}$

$= \sqrt{\left(\dfrac{1+\sin^2\frac{1}{2}(B-C)\cos^2\frac{1}{2}(B-C)\tan^4 R}{\tan^2 R}\right)}$

$= \sqrt{[\cot^2 R + \tfrac{1}{4}\sin^2(B-C)\tan^2 R]}$.

The analogous theorem *in plano* is $\tfrac{1}{2}FF' = R$, where F, F' are the points of intersection of the bisectors of the angle BAC with the circum-circle of the triangle ABC.

10525. (Professor Wolstenholme, M.A., Sc.D.)—The pedal of the parabola $y^2 = 4ax$ is taken with regard to the point (X, Y): prove (i.) that the three inflexions of the pedal lie on the straight line

$$x(3a+X) - yY + X(a-X) = 0;$$

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also (ii.) that, if from each inflexion P be drawn a straight line Pp touching the pedal in p, a conic can be drawn touching the pedal in the three points p, and this conic will touch the nodal tangents.

Solution by G. N. WATSON, B.A.

(i.) The equation of any tangent to the parabola is

$$y = mx + a/m \quad \ldots\ldots(1).$$

The perpendicular from (X, Y) on this line is

$$(Y-y)\,m + (X-x) = 0 \quad \ldots\ldots(2).$$

Solving (1) and (2), we get

$x = [m\,(mY+X) - am]/[m\,(1+m^2)]$. $y = [m^2(mY+X)+a]/[m\,(1+m^2)]$,

as the co-ordinates of any point on the pedal; the pedal is, accordingly, a unicursal cubic; it has a node (not a cusp, unless $Y^2 = 4aX$).

Now, if $x = V/U$, $y = W/U$, U, V, W being any functions of m, the condition $d^2y/dx^2 = 0$ can be written in the form

$$\begin{vmatrix} U, & V, & W \\ \dot{U}, & \dot{V}, & \dot{W} \\ \ddot{U}, & \ddot{V}, & \ddot{W} \end{vmatrix} = 0,$$

dots denoting differentiations with respect to m. Hence the parameters of the points of inflexion on the pedal are the roots of

$$\begin{vmatrix} m\,(mY+X)-am, & m^2\,(mY+X)+a, & m\,(1+m^2) \\ 2mY+X-a, & m\,(3mY+2X), & 1+3m^2 \\ 2Y, & 6mY+2X, & 6m \end{vmatrix} = 0.$$

This reduces to

$$m^3\,(X^2+Y^2-aX) - 3am^2Y + 3a\,(a-X)\,m + aY = 0 \quad \ldots\ldots(3).$$

The parameters of the points where $Lx+My+N=0$ cuts the cubic are the roots of the equation

$$m^3\,(MY+N) + m^2\,(LY+MX) + m\,(N+LX-aL) + aM = 0 \ldots\ldots(4).$$

(3) and (4) are identical if

$$M = Y, \quad L = -3a-X, \quad N = X\,(X-a).$$

Hence the inflexions lie on the line

$$x\,(3a+X) - yY + X\,(a-X) = 0.$$

(ii.) This is a descriptive property and is unaltered by any number of projections. It is true for all nodal cubics.

Any nodal cubic can be conically projected into $y^2 = x^2\,(x+c)$. And this can, by two orthogonal projections, be projected into

$$y^2 = x^2\,(x+1) \quad \ldots\ldots(5).$$

The inflexions of this curve are at $[-\frac{4}{3}, \mp(4i/3\sqrt{3})]$, infinity. The tangent to (5) at $[(m^2-1),\ m\,(m^2-1)]$ is $2my - x\,(3m^2-1) + (m^2-1)^2 = 0$. This passes through one of the finite inflexions if $m = \mp i\sqrt{3}$.

Hence the projections of the points p_1, p_2 corresponding to the finite inflexions are $(-4, \pm 4i\sqrt{3})$, and the tangents to the cubic thereat are

$$5x \mp i\sqrt{3}\,y + 8 = 0 \quad \ldots\ldots(6).$$

The projection of the third point p_3 is $(-1, 0)$ and the tangent to the cubic thereat is $x+1=0$.

Now consider the conic $y^2 = 2\,(x+1)\,(ax+b)$. It passes through p_3 and the tangent there is $x+1=0$. It touches the nodal tangents, $y = \pm x$, provided that $(a+b)^2 + 2b = 0 \quad \ldots\ldots(7)$.

It passes through p_1, p_2, provided that

$$b - 4a = 8 \quad \ldots\ldots(8).$$

And the tangents at p_1, p_2 are those given by (6), provided that

$$\tfrac{1}{4}\,(7a-b) = -5, \quad \tfrac{1}{4}\,(4a+2b) = -8 \quad \ldots\ldots(9).$$

The four conditions (7), (8), and (9) are all satisfied by taking $a=-4$, $b=-8$, which proves the theorem; the conic required for the cubic $y^2 = x^2\,(x+1)$ being $y^2 + 8\,(x+1)\,(x+2) = 0$.

16510. (Professor E. HERNÁNDEZ.)—l nombres $a, b \ldots k, l$ étant donnés, si on forme le tableau

$$\left.\begin{matrix} a, & 2a, & 3a \ldots la \\ b, & 2b, & 3b \ldots lb \\ \ldots & \ldots & \ldots \ldots \\ k, & 2k, & 3k \ldots lk \end{matrix}\right\} \quad \ldots\ldots(1)$$

il y aura autant de colonnes dont tous les nombres sont des multiples de l qu'indique le plus grand commun diviseur des nombres $a, b, c \ldots l$.

Solution by the PROPOSER.

d étant le plus grand commun diviseur de $a, b \ldots l$, on a

$$a = dg_1,\ b = dg_2 \ldots k = dg_{l-1},\ l = dg_l.$$

Or, on a que

$$\begin{matrix} lg_1, & 2lg_1 & \ldots\ (d-1)\,lg_1, & dlg_1, \\ lg_2, & 2lg_2 & \ldots\ (d-1)\,lg_2, & dlg_2, \\ lg_{l-1}, & 2lg_{l-1} & \ldots\ (d-1)\,lg_{l-1}, & dlg_{l-1} \end{matrix}$$

sont des nombres qui se correspondent, en formant d colonnes dans le tableau (1), car il est facile de voir, qu'en remplaçant l par dg_l on a

$$\begin{matrix} g_la, & 2g_la \ldots (d-1)\,g_la, & la, \\ g_lb, & 2g_lb \ldots (d-1)\,g_lb, & lb, \\ \ldots & \ldots\ \ldots\ \ldots\ \ldots & \ldots \\ g_lk, & 2g_lk \ldots (d-1)\,g_lk, & lk. \end{matrix}$$

Notes on the Division of Decimals.

I. *By* J. HARTLEY FUDGE, M.A. (Lond.).

Mr. Bell's method of division of decimals in your December number admits, I think, of being made more easily intelligible to the youngest pupil than he has left it. What objection can there be to the preliminary step of multiplying divisor and dividend by a sufficient number of tens to make the divisor a whole number? The use of the phrase "shifting the point so many places" I would not allow; but when the pupil is allowed, in dividing by $5\frac{1}{2}$, to reduce both numbers to halves first, why deny him this particular short cut?

Mr. Bell says that the division is proceeded with as in simple division, but with a very important saving clause, the awkward explanation of which may well be spared the pupil. Were he dividing by short division he would expect to put his *quotient* figure down first, thus:

$$385\ )\ 28{\cdot}9905$$
$$\cdot 07$$

But, as he needs the space beneath to show the working, the master has only to suggest that the quotient be written above, and the position of the first figure needs no further explanation.

II. *By* B. C. WALLIS, F.C.P., B.Sc. (Econ.).

The note by Mr. A. H. Bell, B.Sc., on the teaching of division of decimals seems to me to be but a variant for the mechanical process usually employed; *i.e.*, it depends upon artificial placing of the figures. May I suggest that it is equally easy to separate the two essential parts of division of decimals; (i.) the significant figures, (ii.) the place value of those figures?

This is done by training the pupils to find a first approximation to the answer, an operation which settles the question of place value.

Consequently, the decimal point disappears from the division process, which can be carried as far as is convenient.

The method prepares the way for later work and trains the child to a habit of first approximation which tends to accuracy.

E.g., to divide 4·0875 by 0·075.

Step 1.—(Mental). Roughly $408 \div 7$, *i.e.*, over 50; therefore the answer is roughly 50.

Step 2.—

$$75\ )\ 40875$$
$$\underline{545}$$

or

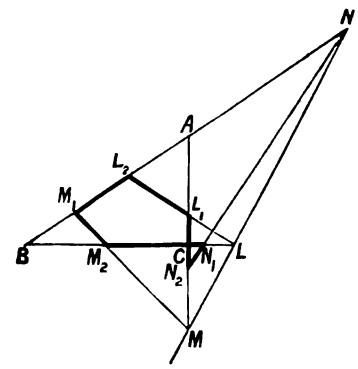
$$3\ )\ 40875$$
$$25\ )\ 13625$$
$$\underline{545} \quad \text{Ans. } 54{\cdot}5$$

or by long division.

Note by Professor SANJÁNA, M.A.

In *The Educational Times* for December, 1908, my solution, marked (II.), of Question 16449 requires a separate figure, which I give below. Also, "L," at end of first line, should be "L_2."

The hexagon is shown in thick lines.



16514 [& **16550** which is identical with 16514]. (R. F. DAVIS, M.A.)—Factorize algebraically

(1) $4x^6 + 2a^3x + a^6$, (2) $x^7 - 2a^2x^5 + a^7$;

and thence write down the factors of 4,000,021 and 9,800,001.

Solutions (I.) *by* T. STUART, M.A., D.Sc., *and* Prof. E. B. ESCOTT; (II.) *by* Lt.-Col. ALLAN CUNNINGHAM, R.E., *and* JAMES BLAIKIE, M.A.; (III.) *by* W. RIGBY, M.A., *and* T. K. VENKATARAMAN, M.A.

(I.) (i.) $4x^6 + 2a^3x + a^6 \equiv (2x^3 + a^2x + a^3)^2 - (ax)^2\,(2x+a)^2$
$\equiv (2x^3 + 2ax^2 + 2a^2x + a^3)(2x^3 - 2ax^2 + a^3)$.

This gives for $x = 10$, $a = 1$, $4{,}000{,}021 = 1801 \cdot 2221$.

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(ii.) $x^7-2a^2x^5+a^7=(x-a)(x^3+ax^2+a^3)(x^3-a^2x-a^3)$,

giving for $x=10$, $a=1$,

$$9,800,001 = 3^3.367.989 = 3^3.23.43.367.$$

Note.—These are only two of an infinite number of similar trinomial expressions which can be algebraically factorized. A list of binary trinomial forms $(2^n\pm 2^q\pm 1)$ which can be algebraically factorized appeared in the *Messenger of Mathematics* (New Series, No. 437, September, 1907). More general forms (from which these are deducible) are :—

(1) $x^5+xy^4+y^5=(x^2+xy+y^2)(x^3-x^2y+y^3)$,

(2) $4x^5-x^3y^2+y^5=(2x^2+xy+y^2)(2x^3-x^2y-xy^2+y^3)$,

(3) $8x^5+2x^2y^3+y^5=(2x^2-2xy+y^2)(4x^3+4x^2y+2xy^2+y^3)$,

(4) $8x^6+2xy^5-y^6=(2x^2-2xy+y^2)(4x^4+4x^3y+2x^2y^2-y^4)$,

(5) $16x^4-x^2y^2+y^4=(4x^2-3xy+y^2)(4x^2+3xy+y^2)$,

(6) $4x^{12}+8x^4y^8+y^{12}=(2x^6-4x^5y+4x^4y^2-2x^3y^3+y^6)\times(2x^6+4x^5y+4x^4y^2+2x^3y^3+y^6)$,

(7) $x^8-8x^2y^6+4y^8=(x^4+2x^3y+2x^2y^2-2y^4)(x^4-2x^3y+2x^2y^2-2y^4)$,

(8) $16x^8-4x^4y^4+y^8=(4x^4-4x^3y+2x^2y^2-2xy^3+y^4)\times(4x^4+4x^3y+2x^2y^2+2xy^3+y^4)$,

(9) $4x^8+x^4y^4+4y^8=(2x^4-2x^3y+x^2y^2-2xy^3+2y^4)\times(2x^4+2x^3y+x^2y^2+2xy^3+2y^4)$, ...

(II.) It will suffice to express each number (N) in the form $N=P^2-Q^2$, whereby at once $N=(P-Q)(P+Q)$.

(1) $N=4x^6+2a^3x+a^6=(2x^3+a^2x+a^3)^2-[ax(2x+a)]^2$.

Ex. $4000021=4.10^6+2.1^5.10+1^6=2011^2-210^2=1801.2221$.

(2) $N=x^7-2a^2x^5+a^7=(x-a)\{x^6+x^5a-x^4a^2-x^3a^3-x^2a^4-xa^5-a^6\}$
$=(x-a)\{(x^3+\frac{1}{2}x^2a-\frac{1}{2}xa^2)^2-(\frac{1}{2}x^2a+\frac{1}{2}xa^2+a^3)^2\}$
$=(x-a)(P^2-Q^2)$.

Ex. $9800001=10^7-2.1.10^5+1^7=9(1045^2-56^2)$
$=9.989.1101=9(23.43)(3.367)$.

To Dr. Stuart's interesting collection might be added :

(α) $x^4+x^2y^2+y^4=(x^2-xy+y^2)(x^2+xy+y^2)$.

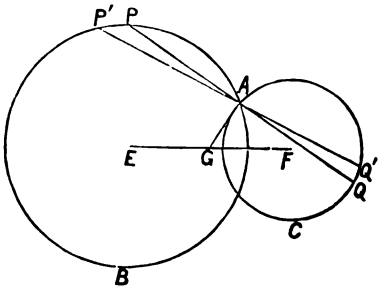
(β) $x^4-3x^2y^2+9y^4=(x^2-3xy+3y^2)(x^2+3xy+3y^2)$.

(γ) $x^8+17x^4y^4+4y^8=(x^2-2xy+2y^2)(x^2+2xy+2y^2)(2x^2-2xy+y^2)\times(2x^2+2xy+y^2)$.

[Rest in *Reprint*.]

16544. (C. E. Youngman, M.A.)—Across two given circles B, C, through the point A common to both, draw that chord PAQ which makes the area PBCQ maximum.

Solution by W. F. Beard, M.A.



Let P'AQ' be a position adjacent to the position PAQ of maximum area.

Then

area PAP' = area QAQ'

ultimately, and

$\angle PAP' = \angle QAQ'$;

therefore AP = AQ

in the maximum position.

To draw such a chord join the centres E, F. Bisect EF at G.

Draw PAQ perpendicular to GA, and the proof is obvious.

N.B.—The Proposer meant to denote the centres as well as the circles by B, C; it makes a different question to the one solved.

16458. (C. M. Ross.)—Prove that the value of the determinant

$$\begin{vmatrix} 1+x^2, & x, & 0, & 0, & \dots \\ x, & 1+x^2, & x, & 0, & \dots \\ 0, & x, & 1+x^2, & x, & \dots \\ \dots & \dots & \dots & \dots & \dots \end{vmatrix}$$

of the mth order is $1+x^2+x^4+\dots+x^{2m}$.

Additional Solution by Prof. Nanson.

Denoting the determinant by u_m, we have

$$u_m=(1+x^2)u_{m-1}-x^2u_{m-2};$$

therefore $$u_m-u_{m-1}=x^2(u_{m-1}-u_{m-2})=x^{2m};$$

therefore $$u_m=1+x^2+x^4+\dots+x^{2m}.$$

QUESTIONS FOR SOLUTION.

In Question 16581 (see *Educational Times*, January, 1909), note that $n\not<1$.

16584. (A. Thompson.)—A gravitating mass of density ρ is bounded by the planes $y=\pm\theta x$, $x=\pm a$, $z=\pm c$. Find the components of attraction at a point (ξ, η, ζ), the squares and higher powers of θ being negligible, especially considering the cases (i.) when a becomes infinite, (ii.) when c becomes infinite, (iii.) when both a and c become infinite.

16585. (*Communicated by* "François.")—From a balloon which is travelling horizontally eastward at the rate of 12 ft. per second at a vertical height of 500 ft., a ship is observed due south of the balloon, the angle of depression being 45°. One minute later the same ship is observed to be due south-east of the balloon, the angle of depression being 30°. Find the velocity and direction of motion of the ship. (Univ. of London, B.Sc. Ex., 1908, Pure Maths.)

16586. (Professor Neuberg.)—Intégrer l'équation

$$xyy''+xy'^2-yy'=0.$$

16587. (Professor E. B. Escott.)—Factorize

$$14^8+14^5+1,\quad 7^8+2.7^5+1,\quad 7^{16}+2.7^9+1,\quad 7^8+7^5.2^{17}+2^{32}.$$

16588. (Professor Sanjána, M.A.)—Show how to obtain solutions of equalities of the form $(x+a)(x+b)(c+x)=\square$, for given numerical values of a, b, c. Exs. $(x+3)(x+12)(13-x)$ and $(3-x)(x+12)(x+13)$.

16589. (Professor E. Hernández.)—On donne la suite des nombres 1, 2, 5, 12, 29, ..., dont $u_n=2u_{n-1}+u_{n-2}$, est la loi de formation. On aura : (1) Deux termes consécutifs et au plus trois, auront toujours le même nombre de chiffres. (2) La somme des $n-2$ premiers termes augmentée de la somme des $n-1$ premiers termes plus 1, est égal au terme de rang n. (3) Le carré d'un terme de la suite est égal au produit augmenté ou diminué de 1, du terme qui précède par celui qui suit. (4) Le terme u_{2p+1} est égal à la somme des carrés des termes consécutifs u_{p-1} et u_p. (5) Si des restes obtenues dans la recherche du plus grand commun diviseur de a et b, par la méthode abrégée, c'est à dire, en faisant toujours que chaque reste soit plus petit que la moitié du diviseur, on en trouve deux consécutifs, compris entre u_{n+1} et u_n, on n'en trouve point entre u_{n-1} et u_n. (6) Dans la recherche du plus grand commun diviseur de a et b, par la méthode abrégée, on aura à effectuer un nombre de divisions au plus égal à trois fois le nombre de chiffres du plus petit des nombres donnés.

16590. (C. M. Ross.)—If

$a_1yz+b_1(y+z)+c_1=0$, $a_2yz+b_2(y+z)+c_2=0$, $a_3yz+b_3(y+z)+c_3=0$,

are true for an infinite series of values for x, y, z; prove that in general

$$a_2c_3+a_3c_2=2b_2b_3,\quad a_3c_1+a_1c_3=2b_3b_1,\quad a_1c_2+a_2c_1=2b_1b_2.$$

16591. (Professor Nanson.)—A disc of given radius moves with its centre on a circle with given centre and radius. If the aspects of the disc and circle are assigned, the edge of the disc traces out a surface. By varying the aspects, but so that each remains parallel to a fixed line, we get a system of surfaces. Required the envelope of these surfaces.

16592. (T. Stuart, M.A., D.Sc.)—Prove that the sides of the six self-conjugate triangles of four conics, taken in pairs, all touch a net of conics $\lambda\phi+\mu\psi=0$, $\phi=0$ and $\psi=0$ being the tangential equations of two conics of the net.

16593. (S. Narayana Aiyar.)—Prove that every conic inscribed in a triangle passes through at least three pairs of real points which are isogonal conjugates with respect to the triangle, but never more than four pairs. Also give a geometrical construction to determine these points. Hence show that the inscribed (or an escribed) circle of a triangle passes through three and only three pairs of real points which are isogonal conjugates with respect to the triangle.

16594. (A. M. Nesbitt, M.A.)—If, within the angle A of a triangle ABC, two lines be drawn AL, AL', equally inclined to AB and AC respectively, and meeting BC in L, L'; and if the same be done for the other angles, prove (1) that a conic S will pass through the six points L, L', ...; (2) that a conic S' will touch the six lines AL, AL', ...; (3) that a conic may be drawn through the four intersections of S, S', which shall also touch the sides of ABC; (4) that a conic may be drawn touching the four common tangents of S and S' which shall also circumscribe ABC.

16595. (F. G. W. Brown, B.Sc., L.C.P.)—ABC is a triangle having a right angle at C; from a point D in AB, DF is drawn parallel to BC, and DE to AC. If AB = 13·75 cms., DE = 5 cms., DF = 4·5 cms., find by the methods of *simple* quadratic equations, the length of AC.

16596. (I. Arnold.)—Construct a quadrilateral having its sides equal to four given right lines, and its area equal to a given rectangle, specifying under what conditions the problem becomes impossible.

16597. (C. E. Youngman, M.A.)—Two confocal hyperbolas, with centre O, one with an angle 30° between its asymptotes, the other rectangular, have a triangle ABC circuminscribed; show that in ABC one of the ex-circles is equal to the circum-circle and subtends 60° at O, and

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that the in-circle and the other ex-circles subtend 120° at O; prove also that the second point at which these last three subtend equal angles lies on the Brocard axis of ABC.

16598. (M. T. Naraniengar, M.A.)—A is a fixed point. P is any point on a fixed circle. Show that the inverse of the fixed circle with respect to a circle of radius PA and centre P envelopes another fixed circle.

16599. (W. F. Beard, M.A.)—The inverses of the circum-circle of a triangle ABC with regard to A, B, C, and with radii of inversion BC, CA, AB respectively, meet BC, CA, AB respectively at X, Y, Z. Prove (1) that AX, BY, CZ meet at a point P on the circum-circle of ABC; (2) that BZ.CY = AB.AC; (3) that, if G, K are the centroid and symmedian point of ABC, then HK is the axis of perspective of the triangles XYZ, ABC.

16600. (W. Gallatly, M.A.)—If $A+B+C=180°$; prove that

$$(\sin B+\sin C)(1+2\cos B)(1+2\cos C)+\ldots$$
$$=4(\sin B+\sin C)(\sin C+\sin A)(\sin A+\sin B).$$

16601. (R. F. Davis, M.A.)—If A, B, C are the angles of a triangle, factorize:— $\cos^2 B+\cos^2 C+2\cos 3A\cos B\cos C$.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11884. (Capt. de Rocquigny.)—Aucun nombre triangulaire ne peut être cube parfait.

11898. (Professor Bhattacharya.)—Observations give results 4·1, 4·23, 4·55, 4·56; find the probable error of the average.

11900. (Professor Orchard.)—Given that $(x+y)/(x-y)$ varies as $(y+z)/(y-z)$, and that $x=1$ when $y=2$ and $z=3$, prove that

$$12y^4+y^3(7x+z)+y^2(x^2+4xz-z^2)-8xyz^2-16x^2z^2=0;$$

and interpret geometrically.

11910. (D. Biddle.)—A square disc has its centre fixed, but the normal pointing to any part of the heavens. A particle falls from a position which is over the square when the latter is horizontal. Find the probability that it strikes the square.

11948. (Capt. P. A. MacMahon, R.A.)—A tangent to a parabola inscribed in a triangle is inclined at an angle δ to the axis; find the envelope, and also the locus of the centres of the series of envelopes obtained by varying δ.

11956. (Professor Sylvester, F.R.S.)—If $x, y, z, \ldots$ are positive integers, such that $x+2y+3z+\ldots=n$, where n is any given integer greater than 2; prove that the number of times that $1-x+xy-xyz+\ldots$ exceeds zero is greater than the total number of times that it is equal to or less than zero.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss Constance I. Marks, B.A., 10 Matheson Road, West Kensington, W.

Vol. XIV. (New Series) of the "Mathematical Reprint" is now ready, and may be had of the Publisher, Francis Hodgson, 89 *Farringdon Street, E.C. Price to Subscribers, 5s.; to Non-Subscribers, 6s. 6d.*

THE LONDON MATHEMATICAL SOCIETY.

Thursday, January 14th, 1908.—Sir W. D. Niven, President, in the Chair.

Prof. H. F. Stecker was elected a member.

Mr. W. H. Salmon was admitted into the Society.

The President announced the death of Mr. G. Heppel, who was a member of the Society from 1883 to 1907.

The following papers were communicated:—

"The Canonical Form of a Linear Substitution," Mr. H. Hilton.

"On Octavic and Sexdecimic Residuacity," Lieut.-Col. A. Cunningham.

"On Change of the Variable in a Lebesgue Integral," Dr. E. W. Hobson.

"On Abel's Extension of Taylor's Series," Rev. F. H. Jackson.

"Note on the Evaluation of a certain Integral containing Bessel's Functions," Prof. H. M. Macdonald.

Mr. J. Hammond gave an account of some "Researches connected with the Solution of the Quintic Equation."

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Wallond, H.C.W. *bk.ms.* Brunswick H., Maidstone
Norris, S. *s.ch.* Private tuition
Blairmann, D. *f.ma.* Haberdashers' S., Cricklewood
Blandford, T.C. *d.* Weymouth P.-T. Centre
Nash, W.H. *d.* Mercers' School, E.C.
Russell, P.G. *al.f.* Private tuition
Flynn, F.W. Mercers' School, E.C.
Harlow, F.W. *al.f.* Newcastle Modern S., Newcastle-on-T.
Proper, J.B. *f.* Mercers' School, E.C.
Tuffin, R. *bk.* Grammar S., Shoreham
Moran, F. Private tuition
Needell, C. Mercers' School, E.C.
Waugh, J.B. *h.* Newcastle Modern S., Newcastle-on-T.
Derry, D. *g.al.* Queensberry S., Longton
Rodwell, H.L. *g d.* Private tuition
Dowling, A. *s.* Oxenford H., St. Lawrence, Jersey
Heys, W.T. *al.gm.* Redby Boys' S., Sunderland
Hinwood, G.Y. *s.* The College, Clevedon
Townsend, E.M. *d.* St. Paul's S., West Kensington
Blanksby, F. *d.* Hutton Gram. S.
Samuel, J.T. *f.* Private tuition
Schreier, R.S. *bk.* Gram. S. Shoreham
Bartlett, J R.C. High S for Boys, Croydon
Dale, W.L. *s.* The College, Weston-s.-Mare
Mainprize, J.V. *a.al.gm.f.ch.* Grammar S., Bridlington
Ashwell, W.B. *bk.* Brunswick H., Maidstone
Austin, W.A. *f.* Pitman's S., Southampton Row, W.C.
Bartholomew, J.C. Colebrook H., Bognor
Ingram, A.T. *d.* St. Olave's Gram. S., S.E.
Fleury, W. *f.* Jersey Modern S., St. Helier
Hutchings, H.J. *s.bk.* Wilsford H., Devizes
Pratt, H.B. Grammar S , Shoreham
Thomas, G. Mercers' School, E.C.
Gardeuner, F.C. *e.f.* High S., Camborne
Joule, J.S. Brentwood High S.
Saul, E.R. *f.* Private tuition
White, H.G. Weymouth Modern S.
Butler, A.E. Gram. S., Devizes
Matthews, W.R. Victoria Tutorial Coll., Buckingham Palace Rd., S.W.
Godding, E.F.J. *d.* The College, Clevedon
Moore, G A. *al.* Highbury Park School
Sully, R. Gunnersbury S., Chiswick
Johnson, H.T. Mercers' School, E.C.
Siggs, C.G.D. Boys' High S., Streatham
Compton, R.S. *bk.* Gram S , Shoreham
Johnson, D G. *ch.d.* St. Olave's Gram. S., S.E.
Whillock, G.E B. The Greystones, Scarborough
Chillingworth, H.F *f.* Private tuition
Hodge, G. *bk.* Brunswick H., Maidstone
Leadbeater, H. *al.d.* Grammar S., Scarborough
Minchin, H.N. Grammar S., Shoreham
Price, N.L.T. *bk.* Brentwood High S.
Babbage, N.J. *d.* Wallingbrook S., Chulmleigh
Broxup, C. *s.e.* Margate Commercial S.
Garrett, L.A. *d.* High S. for Boys, Croydon
Goodwin, H. Queensberry S., Longton
Green, W.J. Oakes Inst., Walton, Liverpool

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BOYS, 2ND CLASS, HONS.—*Continued.*

Kitcat, A.J. St. Dunstan's Coll., Margate
Parker, C.S. Private tuition
Rix, S.M. Grammar S., Shoreham
Sainsbury, A.P. *f.d.* St. Paul's S., West Kensington
Spink, S.C. Taunton H., Brighton
Squire, H.F. Private tuition
Young, P.C. *al.d.* Newcastle Modern S., Newcastle-on-T.

SECOND CLASS [*or* JUNIOR].

Pass Division.

[1]Castle, G. Sandwich School
[1]Lyon, W.N.I. *f.* St. Mary's Coll., Harlow
[1]Dodd, J.R. Private tuition
[1]Laurens, S.J. Jersey Modern S., St. Helier
Andrews, D.W.J. *e.* Portsmouth Grammar School
Lyne, F.H. Private tuition
Moore, H.W.H. *al.* Mercers' School, E.C.
Rodway, A.R. Boys' High S., Streatham
Blackford, A.J. *s.* The College, Clevedon
Bobby, F.H. *a.d.* King Edward VI. Middle S., Norwich
Came, D.F.G. *f.d.* Private tuition
Holden, F. *ma.* Southport Modern S.
Lee, C.H. Kendrick S., Reading
Willans, N.J. *l.* Rossall S., Fleetwood
[1]Browell, H.P. Mercers' School, E.C.
Grant, G. *ch.* Archbp. Holgate's Gram. S., York
Jinks, S. Hutton Gram. S
Robinson, H.S. Hutton Gram. S.
Robinson, J.A. *g.f.* Private tuition
[1]Wenham, G. High S. for Boys, Croydon
Willans, W.R. *a.bk.* Chaloner's S., Braunton
Gray, J.H. *s.* Steyne S., Worthing
Johnson, V.R.W. Kendrick S, Reading
Johnston, C.D.O. *s.lt.* KendrickS., Reading
Keet, C.C. Mercers' School, E.C.
Royley, H. Farnworth Gram. S.
Bickerstaffe, T.S. Hutton Gram. S.
Corless, A.F. *d.* Hutton Gram. S.
Cowlin, J.W. *f.* St. Mary's Coll., Harlow
MacFarlane, J.M. GrosvenorColl., Carlisle
West, J.R. *a.* Kendrick S., Reading
Evans, D. Private tuition
Linzee, N.H. *f.* Private tuition
[1]Ryder, C.S. Private tuition
Sankey, J.B. Penketh School
Sutcliffe, E.H. Ellesmere S., Harrogate
Woods, R.S. *al.f.* Dulwich College
Bedell, A.E. *g.f.* Private tuition
Burn, E.W. *al.* Victoria S., Heaton, Newcastle-on-T.
[1]Cochrane, H.D. New College, Herne Bay
Domville, S.T. *al.* Oakes Inst., Walton, Liverpool
Loader, C.P. St.John'sColl., Finsbury Park
Applin, G.W.H. Mercers' School, E.C.
Barnes, J.M. Brighton Gram. S.
Lindsay, G.P. St. Olave's Gram. S., S.E.
Livingston, R. Colebrook H., Bognor
Shrimpton, G.V. *d.* The College, Weston-s.-Mare
[1]Skentelbery, B.T. County S., Liskeard
Stamp, M.F. Mercers' School, E.C.
[1]Faulkner, R.O. Grammar S., Shoreham
Fox, P.W. *g.d.* King Edward VI. Middle S., Norwich
Hemphrey, M.B.K. Brunswick H., Maidstone
Hopley, W.A. *ch.* Whitchurch Gram. S.
LeMasurier, P.H. *f.* St. James' Coll. S., Jersey
Stott, H. Hutton Gram. S.
[1]Brasher, W. Cliftonville Coll., Margate
Coplans, S.H. Simon Langton Boys' S., Canterbury
Mackenzie, J.S. Steyne S., Worthing
Moss, R.E. *d.* Kendrick S., Reading
[1]Saunders, W.H. Private tuition
Bates, T.H. *ch.* Royal Grammar S., Newcastle-on-T.
Charnock, G.B. *f.* Ashland High S., Wigan
Edgar, L. Sandwich School
Hamley, W.W. Boys' High S., Streatham
Hargreaves, H. Newchurch Gram. S.
Hill, R.L. Scarborough College
[1]Newth, F.D. High S. for Boys, Croydon
Page, P. St. Leonards Coll. S
Redman, R.E. Private tuition
[1]Robinson, F.S. Lancaster Coll., W. Norwood
Sadler, N. *al.ch.* Skerry's Coll., Newcastle-on-T.
[1]Stott, G.H. OakesInst., Walton, Liverpool
Adderley, W. The Polytechnic S., Langham Place, W.
Baker, E. The Gram. S., Newton Abbot
[1]Brine, P.J.F. Ashford Gram. S.
Dingle, A.T. *bk. f.* County S., Liskeard
Glick, J. *gm.f.* Thoresby High S., Leeds
Harrison, H. *d.* Canning Street S., Newcastle-on-T.
[1]Stubbs, E.E. Private tuition
Watchorn, S.C. Eversley S., Stamford
Coombs, A.W. *s.* Milton Coll., Bexley Heath
[1]Finch, F.J. Teignmouth College
Goodwin, H. *al.* St. Martin's Gram. S., Scarborough
Hale, F.W. *d.* King Edward VI. Middle S., Norwich
Kingsland, C.J. Grammar S., Shoreham
Luscombe, J. *bk.d.* St. Winifred's, Torquay
Nelson, K.M. *f.* Private tuition
[1]Roberts, J. *w.* Private tuition
[1]Thomas, D.I. Private tuition
Westwater, J.S. *f.* School for Sons of Missionaries, Blackheath
Wolfe, H.L. St. John's Coll., Finsbury Park
Beauchamp, W.G. Private tuition
Beavis, F.E. St.John'sColl., FinsburyPark
Heald, J.H. Hutton Gram. S.
LeMasurier, C.G. *f.* St. Clement's Parochial S., Jersey
Lord, J.A. Farnworth Gram. S.
Neal, F.J. Private tuition
Nelson, H. Farnworth Gram. S.
Oliver, F. Grammar S., Shoreham
Rideal, A. High S. for Boys, Croydon
Allshorn, S.G. Grove H., Highgate
Anderson, B.A. High S. for Boys, Croydon
Banks, E.H. *ch.* LancasterColl., Morecambe
Easton, W.A. *f.* HaileyburyColl., Hertford
Evans, W. *ch.* Queensberry S., Longton
Hodge, R. *bk.* Brunswick H., Maidstone
Long, L. *d.* Richmond Hill School
Ludolf, G.H. *h.* The Northern Institute, Leeds
Petherick, J.S. *s.* Holsworthy Middle S.
[1]Todd, F.J. The Greystones, Scarborough
[1]Traise, E.W. Eversley S., Stamford
Walker, A.D.F. RedbyBoys'S., Sunderland
Carrier, J.R. St. Olave's Gram. S., S.E.
Collett, H.R.P. Private tuition
Gill, J.W. St. Olave's Gram. S., S.E.
Jones, F. Whitchurch Gram. S.
[1]Matthews, C.H. Broomy Hill Acad., Hereford
Tasker, R.H. *f.* Bryn Melyn S., Weston-s.-Mare
Alwood, G.B. Gram. S., Belper
Bell, W. Private tuition
[1]Cranmer, G.P. *al.* Private tuition
Hutchinson, W. *bk.* Grammar S., Fulwood, Preston
Long, R.M. St. Dunstan's Coll., Margate
Mortimer, G. *bk.* Southport Commercial Coll.
Oldham, E.C. St. James' Coll. S., Jersey
Ordish, F.J. *f.* Mercers' School, E.C.
[1]Simpson, S.E.M. Mossley Hall S., Congleton
Warren, J.W. *h.* Private tuition
[1]Anderson, A.E.H. *d.* High S. for Boys, Croydon
Bernard, A.S. Brondesbury College
Carter Braine, J.F. *d.* St. Paul's S., W. Kensington
Fulton, S. Gunnersbury S., Chiswick
Gaud, D.H. Froebel H., Devonport
Gibson, W.S. High S. for Boys, Croydon
[1]Gill, R. Private tuition
Hardy, E.A. *d.* St. Paul's S., W. Kensington
Harper, E.C. Private tuition
[1]Jones, G.H.W. Long Ashton S., Bristol
Lovell, E.R. Weymouth P.-T. Centre
Reeves, R.A. Kendrick S., Reading
[1]Robb, W.A. Barton S., Wisbech
Whiley, E.A. Bridlington College
Ambrose, L.G. Bedford H., Folkestone
Christie, G. Private tuition
Knibb, H. Comm. S., Stratford-on-Avon
[1]Laurenson, E. Christ Church Hr. Elem. S., Southport
Pearson, L.S.W. Boys' High S., Streatham
Scott, T.H.H. High S., Market Drayton
Southall, P.E. Grammar S., Shoreham
Wallis, A.B. Tynemouth School
Waylett, J.R. High S. for Boys, Croydon
Aitkin, W.B. Gravesend Modern S.
Brierley, H. OakesInst., Walton, Liverpool
[1]Charoen, M.L. *m.* Arnold H., Chester
[1]Jones, F. Private tuition
Mason, C.W.J. Mercers' School, E.C.
Rycroft, E.C. Thornton Heath School
Swinscoe, A.H. St. Olave's Gram. S., S.E.
Wilders-Lewis, H.C. High S. for Boys, Croydon
Brown, G. *d.* Canning Street S., Newcastle-on-T.
Colley, T. Gram. S., Fulwood, Preston
Crane, W.A. Private tuition
Hollis, H.F. *f.* Private tuition
Madge, H.M.A. South Molton United Higher S.
Murphy, J.B. Gram. S., Belper
Wenmoth, L.J. *bk.* County S., Liskeard
Beevor, L.P. Grammar S., Belper
[1]Brealey, B.W. Private tuition
Browning, C. Private tuition
Colverson, A.D. Langharne S., Southsea
Frampton, H.L. Steyne S., Worthing
Hainsworth, W. Hall Gate S., Doncaster
Jeffreys, E.W. Kingsholme S., Weston-s.-Mare
Kettlewell, N.H. Private tuition
Manton, M.D. Derwent H., Bamford
Marshall, W.E. *al.* Holsworthy Middle S.
Pendleton, H.C. St. Leonards Coll. S.
Tydeman, B.V. Private tuition
[1]Bush, D. Hutton Gram. S.
Carman, R. St. Olave's Gram. S., S.E.
Gilbertson, F.J. Argyle H., Sunderland
Horton, R.K. Cliftonville Coll., Margate
Meyer, H. Mercers' School, E.C.
Naylor, F. *f.* Rastrick Gram. S., Brighouse
Webb, G.T. *f.* Private tuition
[1]Buck, E. Private tuition
[1]Coote, P.E. Cambridge H., Camden Rd., N.
Eason, W. Margate Commercial S.
Emery, P.C. Kendrick S., Reading
Evetts, R.C.T. St. Paul's S., W. Kensington
[1]Foster, A.D. Collegiate S., Bridgwater
Harris, W.H. Private tuition
Pierce, W.C. *bk.* St. Leonards Coll. S.
Simonsen, W.V. Colebrook H., Bognor
Summers, L.W Brondesbury College
Welfare, S.A. Brunswick H., Maidstone
[1]West, D.A. St. Dunstan's Coll., Margate
Wilson, R.L. Grosvenor Coll., Carlisle
[1]Allen, J.E. High S., for Boys, Croydon
Angwin, R.P. *a.al.* Highbury Park School
Bell, A.E. Derwent H., Bamford
Day, J. Queensberry S., Longton
Dowding, C.A.L. The College, Weston-s.-Mare
Drake, D.H. Ellesmere S., Harrogate
Horton, S. St. Martin's Gram. S., Scarborough
Rodriguez, C.E. Gunnersbury S., Chiswick
[1]Sinclair, R.F. Ryde House Comm. S., Ripley
[1]Smith, J.W. Private tuition
Amos, T. *al.* Grammar S., Sale
[1]Candish, E.J. *bk.* St. Winifred's, Torquay
[1]Gardner, W.P. Oakes Inst., Walton, Liverpool
Glasper, W. The Preston Gram. S., Stokesley
Hopkins, S.N. *a.al.f.* Private tuition
Lack, E.E. *s.* Grove H., Highgate
Llarena, E.F. Dulwich College
Poulton, A.H. *mu.* Ryde House Comm. S., Ripley
Price, H.P. Private tuition
Williams, E.R. *w.* Private tuition
Bennett, W.L.E. 57 Lansdowne St., Hove
[1]Chester, C.C. St. Leonards Coll. S.
Coombs, A.C. *d.* Beverley S., Barnes
Day, G.K. Western Coll., Harrogate
Gore-Jones, S.F. High S. for Boys, Croydon
Hyde, W.R. St. John's Coll., Finsbury Park
[1]Ogden, J.M. The Greystones, Scarborough
Pocock, E.J. Kendrick S., Reading
Bodin, L.A. Argyle H., Sunderland
Caton, T.C. Oakes Inst., Walton, Liverpool
Clarke, H.B. Penketh School
Dodd, A.F. St. Mary's Coll., Harlow
Hewens, F. Margate Commercial S.
Huffam, J.C. The College, Buxton
Perrem, J.H. The Gram. S., Newton Abbot
Ramsden, A.M. Clifton Coll., Harrogate
Roberts, M.E. Margate Commercial S.
Rook, B.H. Froebel H., Devonport
RyanMacMahon, J. Stonyhurst College
Sherrard, F.R.G.N. *d.* Brighton Gram. S.
Skelton, W. *f.* Richmond H., Sandgate
Skinner, W.T. Oakes Inst., Walton, Liverpool
Smith, C. Oakes Inst., Walton, Liverpool
Symes, H. Highfield S., Wandsworth Common
Hartridge, N.L. *ms.* Brunswick H., Maidstone
Heppell, J.G. Canning Street S., Newcastle-on-T.
Journeaux, H. *f.* Jersey Modern S., St. Helier
Kean, J.S. *bk.* Gravesend Modern S.
Ogden, J.R. The Greystones, Scarborough
Read, W.E.I. Brighton College
Smith, R.S. Private tuition
Swarbrick, H. Christ Church Hr. Elem. S., Southport
[1]Tatton, G.P. 36 Stapleton Hall Rd., N.
Wood, D. *f.* Gram.S., Chorlton-cum-Hardy
Wood, F.E. Douglas S., Cheltenham
Leheup, E.P. *bk.* CliftonvilleColl., Margate
[1]Masson, I.A. Mercers' School, E.C.
Tucker, A.E. The Gram. S., Newton Abbot
Woodford, H. TheGreystones, Scarborough
Chappell, H.R. *f.* Finsbury Park Coll.
Cliff, N.D. *f.* The High S., Torquay
[1]Denize, F.A. Jersey Modern S., St. Helier
[1]Macdonald, A. Private tuition
Oliver, R.G. *s.* Holsworthy Middle S.
Ross, J.H. *d.* Christ Church Hr. Elem. S., Southport
Besley, D.J. Chaloner's S., Braunton
Dobson, L.J. Brentwood High S.
Hamilton, M.St.C. Arnold H., Chester
Lear, W.J. Grammar S., Dawlish
Partridge, S.C. Private tuition
Pennington, W.F. The Greystones, Scarborough
Rowbottom, F. Private tuition
Sheard, H.S. *ma.* Southport Modern S.
Townshend, O.B. Private tuition
Woolhouse, F.M. Eversley S., Stamford
Bates, R.N. Private tuition
Curtis, R.L. Grammar S., Dawlish
Griffiths, T.V. King Edward VI. Middle S., Norwich
Henry, M.G. *f.* Private tuition
Heslam, T.W. *bk.* Grosvenor Coll., Carlisle
[1]Huelin, J. Jersey Modern S., St. Helier
Jenner, P.A. Brunswick H., Maidstone
Lockett, G. Queensberry S., Longton
Manuel, J. Crewe Academy
Merrett, E.L. *d.* Mercers' School, E.C.
Shackell, D.R. *f.* Emwell S., Warminster
Sternberg, P. *gm.f.* Private tuition
Ward, E. Private tuition
[1]Barber, N.B. Froebel H., Devonport
Birch, H.J. Derwent H., Bamford
Cartmell, N.W.C. HighS. forBoys, Croydon
Close, W.G. *bk.* Brunswick H., Maidstone
Cooke, E.W. Wilsford H., Devizes
Fehrenbach, F. *d.* St. Boniface's Coll., Plymouth
Ferrington, H. *ma.d.* Bourne Coll., Quinton, Birmingham
Fleming, E.G. *f.* Private tuition
Forrester, H. High S. for Boys, Croydon
Haws, G.W. *f.* Private tuition
Jenkinson, E. Private tuition
King, G.W. Private tuition
Le Cornu, J.H. Oxenford H., St. Lawrence, Jersey
Lomas, E. Southampton Boys' Coll., & High S.
Reason, T. F. Private tuition
Smith, A.M. Lancaster Coll., W. Norwood
Steele, H.R. *d.* High S. for Boys, Croydon
Sykes, F. Private tuition
Walpole, R.O. *f.* Gunnersbury S., Chiswick
Wills, G.E. *f.* Grosvenor Coll., Carlisle
Chambers, S. *d.* Eversley S., Stamford
Chataway, J.D.P. Courtenay Lodge, Sutton Courtenay, Abingdon
Currie, H.D. High S. for Boys, Croydon
[1]Evans, J. Private tuition
Horsley, L. Private tuition
Smith, G.A. Private tuition
Virgin, A.H. The School, Bishop Stortford
Bennion, T.R. Oakes Inst., Walton, Liverpool
Bower, A.LeB. *f.* Harleston H., St. Lawrence, Jersey
Cuthbert, R.B. *f.l.* Private tuition
[1]Davidson, L.F. Castle Hill S., W. Ealing
Gardner, L.G. *d.* Archbp. Holgate's Gram. S., York
Hollings, J. St. Olave's Gram. S., S.E.
Ridley, T. Grosvenor Coll., Carlisle
[1]Stansby, E.F. Grammar S., Ongar
Bilby, R.B. Mercers' School, E.C.
Darrington, T.A. Sandwich School
de Verteuil, L. Stonyhurst College
Eady, B. St. Mary's Coll., Harlow
Langley, C.C. *bk.* Brunswick H., Maidstone
Coleman, E.L. Sandwich School
Collis, B. Queensberry S., Longton
Lancaster, G.C. *d.* Private tuition
Lupton, S.W. Kingsholme S., Weston-s.-Mare
Masters, W.E. Private tuition
Morrell, A. Canning Street S., Newcastle-on-T.
Newman, J.C.F. Private tuition
[1]Percy, A.F. The School, Wellington Rd., Taunton
Ward, P. Private tuition
Beaver, G.H. *ch.* King Edward VI. Middle S., Norwich
Buck, A.G. Grosvenor Coll., Carlisle
Caunt, C. Lady Hawkins'Gram.S., Kington
[1]Clemmens, E.W.S. Cambridge H., Camden Rd., N.
Conn, W.H. W. Jesmond Senior S., Newcastle-on-T.
Panton, D.F. Dulwich College
[1]Compton, J.S. Grammar S., Shoreham
Croft, W.L. *m.* Crich Common S., Matlock Bath
Durham, W. The Preston Gram. S., Stokesley
Fletcher, J.H. Southport Modern S.
Forbes, H.W. Private tuition
Gibbs, R.C. St. Mary's Coll., Harlow
Hallmark, A.S. Kendrick S., Reading
Lewis, A.W. *f.* St. Mary's Coll., Harlow
[1]Maitland, C.J. High S. for Boys, Croydon
Mallet, H. Private tuition
Rowlands, T.S. Bourne Coll., Quinton, Birmingham
[1]Barrett, C.A. *bk.* Grammar S., Ongar
Bindon, L.W. Cliftonville Coll., Margate
Buer, W.B. Warner's Coll., Richmond
Capon, C.J.S. Hillmartin Coll., Camden Rd., N.W.
Chefalino, A. Grammar S., Shoreham

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BOYS, 2ND CLASS, PASS—*Continued.*

Corpe, H. Margate Commercial S.
Deane G.S. *f.* De Aston S., Market Rasen
Elliott, H.W. St. Olave's Gram. S., S.E.
Holford, A.R. King Edward VI. Middle S., Norwich
Morris, R.P. Emlyn Gram. S., Newcastle Emlyn
Parry, J.M. *f.* Private tuition
Roberts, J. Oakes Inst., Walton, Liverpool
Saul, R. King Edward VI. Middle S., Norwich

Bridge, G.R. Winchester H., Bristol
Chadwick, E. *d.* St. Martin's Gram. S., Scarborough
Clague, C.E. Royal Gram. S., Newcastle-on-T.
LeGros, J. Jersey Modern S., St. Helier
Lowick, H.S. Cusack Inst., Broad St. Place, E.C.
Rose, S.H. Bridlington College
Stevens, S. Private tuition

Durrant, J.L. Oakes Inst., Walton, Liverpool
Follett, H.J. Hillcroft S., Mortimer
[1]Grace, B.F. Broomy Hill Acad., Hereford
Johnson, W. Newcastle Modern S., Newcastle-on-T.
McGowan, H. Private tuition
Mulliner, N. Private tuition
Pengilly, J.A. Bradley High S., Newton Abbot
Tanton, S.A. St. Leonards Coll. S.
Watkins, G.A. *bk.* Southdown Coll., Eastbourne
[1]Wills, T. Charlton Academy, Bath

Beswick, W.T. *f.* Private tuition
Carruthers, P.G.E. Grosvenor Coll., Carlisle
Ely, A J. *gm.f.* Kingsbridge Gram. S.
Evans, C.H. *f.* Private tuition
Grogan, E.G. Grammar S., Shoreham
Holmes, N.W. *al.* Private tuition
Langdon, G.H. Holsworthy Middle S.
Laurens, A. Jersey Modern S., St. Helier
Lennon-Brown, A.G. Private tuition
Mallet, A. St. James' Coll. S., Jersey
Romeril, A.J. *f.* Harleston H., St. Lawrence, Jersey
Thompson, J.H. Penketh School
Thomson, C.G. 61 Mutley Plain, Plymouth

Bannerman, S.H. Private tuition
Brett, E.E. Brunswick H., Maidstone
Clarke, J.G. Kendrick S., Reading
Cockerill, L.D.J. Forest Gate High S.
Ellis, A. Purley H., Peterborough
Griffin, C.L. *al.* Thornton Heath S.
Palmer, F. Hoe Gram. S., Plymouth
Peerless, H.T. Bedford H., Folkestone
Richardson, D.R. Hutton Gram. S.
Rogers, R.S. Oakes Inst., Walton, Liverpool
Rowe, F. St. Boniface's Coll., Plymouth
Trethewey, L. *bk.* St. Winifred's, Torquay
Way, W.E.T. Cliftonville Coll., Margate
Weatherhogg, W. *d.* Spalding Gram School
Wilson, J.C. Littleton H., Knowle, Bristol
Wright, S.M. Private tuition

Bennett, J.D. *s.*, Holsworthy Middle S.
Denton, J.H. *d.* Easingwold Gram. S.
Dodge, C.E. Grammar S., Devizes
[1]Fisher, C.F. Licensed Victuallers' S., Lambeth
Goodall, H. *f.* Newcastle Modern S., Newcastle-on-T.
Jones, F.W. High S. for Boys, Croydon
McDonald, J.S. W. Jesmond Senior S., Newcastle-on-T.
[1]Moirond, A. *f.* Private tuition
Pentony, J. Stonyhurst College
Scott, E.H. St, Mary's Coll., Harlow

Bewden, J.Y. Farnworth Gram. S.
Bowles, W. Jersey Modern S., St. Helier
Davies, W.M. *mu.* Bourne Coll., Quinton, Birmingham
Fill, C.J. *d.* Grammar S., Ongar
Leaberry, P. Eversley S., Stamford
Linzee, J.I. Warner's Coll., Richmond
[1]Parr, G.W. Lancaster Coll., W. Norwood
Tomkinson, C.W. Mossley Hall S., Congleton
White, C.A. *bk.* Fitzroy S., Crouch End

Barnett, A.E. Douglas S., Cheltenham
Easton-Cook, A.E. *f.* Grammar S., Shoreham
Ellis, D.A. St. Mary's Coll., Harlow
Glover, F. Holsworthy Middle S.
Griffiths, R.G. *f.* Private tuition
Lee, H. *f.* Sandbach School
Letheren, S.K. Wallingbrook S., Chulmleigh
MacIntyre, R.H. Boys' High S., Streatham
Mallinson, J.F. High S. for Boys, Croydon
Martin, F. Queensberry S., Longton
Roberts, T.S. Probus School
Sharp, G. Devonport High School
Smith, C.F. *f.* Bridlington College
Smith, I.E.J. Forest Gate High S.
Southall, J. Private tuition
Stanfield, C.J. *ma.* Southport Modern S.
Wagner, H. High S. for Boys, Croydon
Womersley, G.V. St. Leonards Coll. S.

Borland, D.D. High S. for Boys, Croydon
Brown, S.D. High S. for Boys, Croydon
Cuthbert, W.E. King Edward VI. Middle S., Norwich
Evans, D.L. Thornton Heath School
Grassam, S.A. Spalding Gram. School
Jardine, D. *f.* Private tuition
[1]Jones, H. Private tuition
[1]Lintern, E.C. Private tuition

Bennett, L.J. *d.* Kingsholme S., Weston-s.-Mare
Bowen, B. St. Mary's Coll., Harlow
Bradshaw, R.J. Arlington Park Coll., Chiswick
Chapman, A.H. Richmond Hill S.
Clarkson, P.D.J. Grammar S., Fulwood, Preston
Crofton, R.L. *d.* Bailey S., Durham
Dodsley, D. Private tuition
Drever, A. Private tuition
Horsfall, E. Lancaster Coll., Morecambe
Payne, G.V. Bracknell College
Richmond, G.H. St. Mary's Coll., Harlow

Burton, C.E.B. *d.* West Cliff S., Preston
Cooke, J.H. Oakes Inst., Walton, Liverpool
Cox, C. Margate Commercial S.
Farr, A.W. Broomy Hill Acad., Hereford
Gibbs, S.A. St. Mary's Coll., Harlow
Grice, E.J. King Edward VI. Middle S., Norwich
Nicholl, C. St. Martin's Gram. S., Scarborough
Slater, J.A. Grammar S., Shoreham
Tucker, S.L. The Ferns, Thatcham
Williamson, J.H. Barton S., Wisbech
Wright, J.E. *f.* The Leys S., Cambridge

Barfoot, W.P. Private tuition
Blunn, A.G. Mercers' School, E.C.
Collins, R.E. Philological S., Southsea
Ferris, F.J. *f.* Clair-Val S., Gorey, Jersey
Hall, R.F.G. *f.* Private tuition
Hallett, L.R. Highbury New Park Coll., N.
Horncastle, R.W. Ousegate S., Selby
Ollis, W.H.F. Thornton Heath School
Oxley, B.H. Lewisham Park S., S.E
Parsonage, F.H. Crewe Academy
Pitchford, C.E. Grammar S., Shoreham
[1]Pitt, A. Southampton Boys' Coll. & High S.
Place, T.B. Private tuition
Taylor, L. *bk.* Bradley High S., Newton Abbot
Watts, A.E. Tollington Park College, N.

Allkins, W.H. Private tuition
Armistead, A. Hutton Gram. S.
Ayre, A. Chaloner's S., Braunton
Barker, H. The Preston Gram. S., Stokesley
Bennie, M. Oakes Inst., Walton, Liverpool
Berry, P. Douglas S., Cheltenham
Carman, L. Blenheim H., Fareham
Cumming, H. *d.* Hutton Gram. S.
Green, F.N. *ch.* Lancaster Coll., W. Norwood
Hartree, J.R. Emwell S., Warminster
Rule, G.G. Portsmouth Gram. S.
Stacy, W.B. Private tuition

Allen, W.F. Sandbach School
Archer, H. Brunt's Technical S., Mansfield
Edwards, K.G. St. Deiniol's, Bangor
Gordon, H.E. Lancaster Coll., W. Norwood
Heath, S.P. *bk.* Grammar S., Longsight, Manchester
Knatchbull, R. Oxenford H., St. Lawrence, Jersey
Luce, W. Oxenford H., St. Lawrence, Jersey
Macdonald, S.R. Arundel H., Surbiton
Marshall, H.H. Grammar S., Shoreham
Norman, J.G. Grammar S., Shoreham
Reid, R. Private tuition
Wallis, T. Gravesend Modern S.
Wardell, L.J. *f.* Mount Academy, Malton
Watson, M.G. Private tuition

Baker, D.T. Bourne Coll., Quinton, Birmingham
Bullett, G.W. Highfield S., Muswell Hill, N.
Cashin, F.W. Private tuition
Chambers, J.G. Haughton S., York
Epstein, J. Private tuition
Gallop, S.G. Winchester H., Bristol
Highton, C.L. Southport Modern S.
Holloway, W.J. The College, Clevedon
Horbury, F. *gm.* Private tuition
Maelzer, N.H.S. Private tuition
Perkin, L.N. Wallingbrook S., Chulmleigh
Roberts, W.S. St. Paul's S., W. Kensington
Short, F.R. W. Jesmond Senior S., Newcastle-on-T.
Spalding, F.L. Private tuition
[1]Thierens, F. Skerry's Coll., Liverpool

Bowman, J. Oakes Inst., Walton, Liverpool
Briggs, G. *ch.* Whitchurch Gram. S.
Campbell, W.S. Private tuition
Fielden, F.E. High S., Leek
Harrison, R. St. Dunstan's Coll., Margate
Marshall, F. Council S., Queenborough
Purvis, G.B. Grammar S., Bridlington

Bates, C.C. Bailey S., Durham
Coupe, J.S. Gram. S., Fulwood, Preston

Crick, A. Private tuition
Holt, H.D.G. Cambridge H., Camden Rd., N.
Ratcliffe, G. Crewe Academy
Ribeiro, J. High S. for Boys, Croydon
[1]Skey, C.O. Cliftonville Coll., Margate
Wilson, R. Barton S., Wisbech

Cook, R.P. St. Leonards Coll. S.
Farquharson, W. Private tuition
Gibbins, G.L. Bradley High S., Newton Abbot
[1]Godfrey, E. Grammar S., Margate
Hoffmann, F.J. Bradley High S., Newton Abbot
MacPherson, N.H. High S. for Boys, Croydon
Ozzard, J.R. *h.* Private tuition
Phillips, R.G. Taunton School
Robinson, C.C. Newquay College
Southan, J. Bewdley Gram. S.
Wright, J.G. Richmond Hill School

Cooke, C.P. King Edward VI. Middle S., Norwich
Goad, A.J. *d.* Private tuition
Martyn, H.J. Drayton Green S., Ealing

Heaviside, S.C. Highfield S., Wandsworth Common
Powell, H.W. Licensed Victuallers' S., Lambeth
Romeril, C. Harleston H., St. Lawrence, Jersey

Allen, S.B. Barton S., Wisbech
Dale, B. St. Boniface's Coll., Plymouth
Smith, C.H. Lancaster Coll., W. Norwood

Adderley, F.A. Boys' Coll. S., Aldershot
Bayley, J.H. Private tuition
Beach, A.H. Private tuition
Crisp, A.F. Langharne S., Southsea
Dixon, C.C. Private tuition
Godsell, R. Spalding Gram. S.
Greenwood, H.W. Municipal Secondary S., Hanley
[1]Hill, A. Private tuition
Morgan, H. Collegiate S., Bridgwater
Morris, W.B.W. Lytham College
Nichols, J. Eversley S., Stamford
Rose, L. St. Martin's Gram. S., Scarborough
Shaw, H.C. Private tuition
Stoneman, E.A. Hoe Gram. S., Plymouth
Walford, T.J. St. Mary's Coll., Harlow
Welch, G. Chaloner's S., Braunton

Adams, R.G.H. Maida Vale School, W.
Austin, A.T. Private tuition
Chauffourier, V.M.D. *f.* Private tuition
Ebbutt, H.B. High S. for Boys, Croydon
Elliot, B. Oakes Inst., Walton, Liverpool
[1]Leslie, P.W.L. *p.* Private tuition
Payne, C.A. Lancaster Coll., Morecambe
Pike, H.T. High S. for Boys, Croydon
Richards, J.B. University S., Southport
Shaw, R.P. Harrogate Modern Coll.
Thomas, F. Hoe Gram. S., Plymouth
Wilson, S. Bedford H., Folkestone

Barrett, L.L. Private tuition
Bolton, C. Christ Church Hr. Elem. S., Southport
Crowe, A.A.R. Private tuition
Durnford, R.J. Grammar S., Devizes
Giles, E.C. *al.* Private tuition
Gloster, H.W. Ryde House Comm. S., Ripley
Graham, E. Maryport Church of England S.
Harris, W.E. Private tuition
Haynes, J.F. Grammar S., Belper
Peckett, L.V. St. Mary's Coll., Harlow
Swindle, N. Keswick S., Cumberland

Bado, A.J. *sp.* Eastbourne College
Bickerton, C.M. Private tuition
Chandler, E.J. The Ferns, Thatcham
Edmonds, H. Gram. S., Fulwood, Preston
Green, B. *f.* Tamworth Gram. S.
[1]Hills, F.W. St. Leonards Coll S.
Mossop, F.H. Clair-Val S., Gorey, Jersey
Vincent, D.H. High S. for Boys, Croydon
Vinson, A. Private tuition
Wilks, S.E. Private tuition

Bland, R.L. Gunnersbury S., Chiswick
Bradley, R.G. 15 Ellerker Gardens, Richmond
Carrington, G. *bk.* Grammar S., Ongar
Dundas McRae, W. Private tuition
Fairlie, W. Grammar S., Shoreham
Harris, R.O. Argyle H., Sunderland
Irvine, J.W. Private tuition
Jagger, F. Council Secondary S., Halifax
Kappey, C.F.G. Grammar S., Shoreham
Kidner, C.H. High S. for Boys, Croydon
Monckton, E.G. Commercial S., Maidstone
Veitch, J.R. Private tuition

[1]Iberson, F.H. *a.* Private tuition
Jerome, F.E. Boys' Coll. S., Aldershot
Rowlands, R. Bourne Coll., Quinton, Birmingham
Seward, E. Private tuition
Shepherd, C.J. The Ferns, Thatcham
Tilley, E. Montrose Coll., Streatham Hill

Chappell, W. Finsbury Park College
Cossey, S.J. Municipal Secondary S., Norwich

Dickson, McT. Holsworthy Middle S.
Etches, A.J.E. Grammar S., Scarborough
Jolly, S.M. Cliftonville Coll., Margate
McOwan, A. Corner H., Godstone
Paton, G.S. Roseberry H., Scarborough
Roger, J.L. School for Sons of Missionaries, Blackheath
Ulph, H. Springfield Coll., Acton

Featherstone, R.K. Mossley Hall S., Congleton
Hamon, E. Jersey Modern S., St. Helier
Heads, A. Tynemouth School
Jarrett, F.G. Cambridge H., Camden Rd., N.
Kent, J.E. Private tuition
Pallant, F.M. Gravesend Modern S.
Parker, V.S. Kendrick S., Reading
Shackleton, T.S. Private tuition
Stone, W.D. Holborn Estate Gram. S., W.C.
Walklett, T.J. Private tuition
Webb, L.W.H. Grammar S., Redditch

Adams, A.H. Private tuition
Feldincke, J.D. Grammar S., Shoreham
Hollaway, H.W. Thornton Heath School
Hoskin, A.M. County S., Liskeard
Jones, W.H. Southport Modern S.
Kidson, E.L. Willow House Coll., Walsall
Tregear, F. Jersey Modern S., St. Helier

THIRD CLASS.

Honours Division.

Thomas, A.E. *gm.* Froebel H., Devonport
Du Heaume, H.G. *f.l.* Boys' Coll. S., Aldershot
Watkins, E.R.E. *e.g.al.bk.* St. John's Coll., Finsbury Park
Whipp, P.S. *s.e.a.al.gm.f.* Grammar S., Shoreham
Holmes, T. *e.a.al.bk d.* Collegiate S., Bridgwater
Heeley, G.H. *g.gm.d.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Barlow, P. *a.al.gm.d.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Brooks, H., *g.bk.* Wilsford H., Devizes
Southern, C. *s.al.gm.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Arrowsmith, E. *g.al.* Argyle H., Sunderland
Vining, A.D. *e.al.bk.* Collegiate S., Bridgwater
Andreas, G.E. *al.* St. John's Coll., Finsbury Park
Tibbotts, A.H. *g.* Wilsford H., Devizes
Cook, R.H. *e.* St. Aubyn's, Woodford Green
Kitts, H. *mu.* Jersey Modern S.
Seifert, P.F.P. *al.bk.* St. John's Coll., Finsbury Park
Paton, W.L. *e.al.* Oakes Inst., Walton, Liverpool
Perrott, A.W. *e.a.al.* Bradley High S., Newton Abbot
Foster, W.V. *a.al.* Ousegate S., Selby
Moses, E.W. *e.gm.* Argyle H., Sunderland
Coleman, G. *e.al.ge.* St. Mary's Coll., Harlow
Faull, H. *e.gm.d.* Grammar S., St. Ives
Jepson, L.W. *gm.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Needle, E.C. *al.* High S. for Boys, Croydon
Warne, F.E. *al.* St. George's Coll., Wimbledon
Way, E.B. *al.d.* Westbury H., Southsea
Witting, S.N. *a.al.* Grammar S., Scarborough
Anderson, E.V. *al.bk.* St. John's Coll., Finsbury Park
Hann, M. *al.f.* Manor H., Clapham Common
Jones, C.H. *e.gm.f.* Grammar S., Shoreham
Palmer, H.A. *al.gm.* Littleton H., Knowle, Bristol
Welsh, R. *e.al.* Bridlington College
Dawson, H.R. *al.* Alderman Norman's S., Norwich
Fulljames, L.J. *al.* Gravesend Modern S.
Reynolds, A.R. *e.al.* St. Mary's Coll., Harlow
Roux, P.E. *f.* Godwin Coll., Margate
Wright, P. *g.* University S., Southport
Drake, S.E. Grammar S., Devizes
Henri, F. *f.l.* Streatham Coll., S.W.
Higgs, J.N. *a.al.gm.* Manor H., Clapham Common
Toye, R.H. *e.g.f.* Bedford H., Folkestone
Alexander, J.W.E. *h.* King Edward VI. Middle S., Norwich
Arnold, T.J.B. *a.al.* King Edward VI. Middle S., Norwich
Day, E. *gm.* Kendrick School, Reading
Goode, L. *g.gm.* Grammar S., Shoreham
Corin, T.E. Froebel H., Devonport
Jones, S.E. *e.d.* Eversley S., Stamford
Luscombe, L.A. *d.* Eversley S., Stamford
Roper, D.W. *a.al.* Bickerton H., Birkdale, Southport
Taylor, H.L. *gm.d.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme

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BOYS, 3RD CLASS, HONS.—*Continued.*

Batley, J.W. *gm.* Grammar S., Shoreham
Elliott, R.S.V. *al.* Ivel Bury S., Biggleswade
Fletcher, E.A. *al.d.* Grammar S., Belper
Gibaut, L.J. St. James's Coll. S., Jersey
Metcalfe, W. *s.* Bridlington College
Pounsett, R.F. *a.d.* Blenheim H., Fareham

Aubrey, G.F. Ivel Bury S., Biggleswade
Booth, E.V. *e.g.* Taunton H., Brighton
Hindley, A.C. *al.gm.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Turner, H. Gram. S., Ongar
Wilcockson, C.H. *bk.* Cliftonville Coll., Margate

Bulman, T. Grosvenor Coll., Carlisle
Johnson, W.C. Kendrick S., Reading
Loche, R.W. Manor H., Clapham Common
Winter, H.H. *al.d.* Alderman Norman's S., Norvich

Birtles, E.G. *bk.* St. George's Coll., Wimbledon
Browning, H.O. *h.* Gunnersbury S., Chiswick
Caudwell, T. *l.* Westbourne Rd. Prep. S., Sheffield
Gummer, H.L. *e.l.* St. Mary's Coll., Harlow
Hayward, S.L. *al.gm.* Kendrick S., Reading
Heasman, G.W. Steyne S., Worthing
Hoare, W.H. *al.* Southampton Boys' Coll. & High S.
Lemmon, M.I. *e.gm.* Colebrook H., Bognor
Warner, F.C.F. *d.* St. Aubyn's, Woodford Green
Willan, G. *al.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme

Benzie, B.A.S. *e.* Cliftonville Coll., Margate
Briggs, F.H. *bk.* St. Winifred's, Torquay
Child, M.D. St. Aubyn's, Woodford Green
Kelly, K.G. *g.* Ellesmere S., Harrogate
Meikle, J. *d.* New Coll, Harrogate
Newman, G.A. Winchester H., Bristol
Slee, S.E. *d.* Holsworthy Middle S.
Steele, D. Cliftonville Coll., Margate

Clinch, J.A. Manor H., Clapham Common
Druce, J.G.F. Kendrick S., Reading
Fell, W.J. *bk.* Grosvenor Coll., Carlisle
Golding, C.S. *a.al.gm.* Kendrick S., Reading
Hepworth, T.P. *gm.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Sargent, S.R. *a.* Grammar S., Devizes
Wale, V.H. *s.al.* Cathcart Coll., Cathcart Hill, N.
Wilson, H. Cathcart Coll., Cathcart Hill, N.
Woolverton, H.F *g.* King Edward VI. Middle S., Norwich

Albin, N. *al.d.* High S., South Shore, Blackpool
Booth, A.C *al.* Farnworth Gram. S.
Helleur, S.G. *f.* Harleston H., St. Lawrence, Jersey
Hibberson, W.C. Hatfield Coll., nr. Doncaster
Richards, F.R. *al.* Spencer Coll., Wimbledon
Saphin, H.A. *h.* Taunton H., Brighton
Thomas, R.H.E. St. Winifred's, Torquay

THIRD CLASS.

Pass Division.

²Gilbert, S.F. *d.* National S., Holsworthy
²Bould, A.L. *gm.d.* St. Luke's S., Leek
²Hobbs, F.A. Southdown Coll., Eastbourne
²Snailum, G.F. The College, Clevedon
²Vaughan, C.G. *al.* Newquay College
²Thompson, F. *ma.* Philological S., Southsea
²Coope, S.C. Hutton Gram. S.
²Dixon, C.H. Brentwood High S.
²Dymock, M. Grosvenor College, Carlisle
²Newsome, N. Scarborough College
²Filleul, D. Jersey Modern S., St. Helier
²Graham, W.L. Canning Street S., Newcastle-on-T.
²Batten, E.C. Ivel Bury S., Biggleswade
²Lark, J.R. Hoe Gram. S., Plymouth
²Brackfield, J.A. Brunswick H., Maidstone
²Flower, J.A. *f.* St. Paul's H., St. Leonards-on-Sea
²Moore, E.G. *al.* Highbury Park S.
²Pearce, A.H. Brondesbury College

²Chapman, E.J. King Edward VI. Middle S., Norwich
²Clark, J.H. The College, Weston-s.-Mare
²Cleeve, E.H. Blenheim H., Fareham

²Dady, J.A. King Edward VI. Middle S., Norwich
²Walter, A.D. Steyne S., Worthing
²Bolton, P.L. Hutton Gram. S.
²Shipman, F.L. *f.* Cambridge H., Camden Rd., N.
²Squire, J. St. Boniface's Coll., Plymouth
²Comben, H. High S., Market Drayton
²Simpson, R.W. Tollington S., Muswell Hill, N.
²Smithdale, A.G. King Edward VI. Middle S., Norwich
²Woodruff, C.A. Sandwich School

²Hale, T.H. *d.* King Edward VI. Middle S., Norwich
²Roe, A.S.R. Boys' High S., Streatham
²Bath, J.A. Newquay College

²Field, W.E. St. Dunstan's Coll., Margate
²Hind, R.P. Grosvenor Coll., Carlisle
²Beeson, A.J. Broomy Hill Acad., Hereford

²Francis, A.H. Southdown Coll., Eastbourne
²Triandis, E. Grammar S., Shoreham
²Wigg, J. St. Mary's Coll., Harlow

²Bell, J.S. Tynemouth School
²Butcher, C.E. Grammar S., East Finchley
²Carrick, H.M. The Harrogate Modern Coll.
²Firlz L. Sandwich School
²Ford, R.T. Grammar S., Shoreham
²Watkins, D.H. Emlyn Gram. S., Newcastle Emlyn
²Reed, A. Blenheim H., Fareham

²Conner, E.S. All Hallows S., Honiton
²Dixon, L. Craven Park Colleges, Harlesden
²Mann, M.L. High S., Torquay
²Rix, R.A. Grammar S., Shoreham
²Rymer, J. The Harrogate Modern Coll.
²Self, C.F. King Edward VI. Middle S., Norwich

²Dale, R.E. Grammar S., Chorlton-cum-Hardy
²Ellis, C.O. Froebel H., Devonport
²Linfield, W.F. Steyne S., Worthing
²Myers, M.J. Grammar School, Margate
²Pirrie, R.B. Newcastle Modern S., Newcastle-on-T.

²Boot, P.E. West Hill Council S., Hednesford
²Dias, J.J. Grosvenor Coll., Carlisle
²Still, F.A.W. High S., Market Drayton
²Thompson, N.L. Ivel Bury S., Biggleswade

²Flook, J. Sandwich School
²Fuller, C.M. *bk.* St. Leonards Coll. S.
²King, V. Brunswick H., Maidstone
²Turner, G.F. Scarborough College
²Watson, G. W. Jesmond Senior S., Newcastle-on-T.

²Court, J. Oakes Inst., Walton, Liverpool
²Fuller, C.E. Private tuition
²Powell, R.M. Sandwich School

²Brazier, A.D.C. Gram. S., Shoreham
²Britton, L.E. *ma.* Bourne Coll., Quinton, Birmingham
Buckley, H.G. Bridlington College
²de Gruchy, R.T. *f.* Clair-Val S., Gorey, Jersey
Francis, C.D. St. John's Coll., Finsbury Park
Hedley, R. Argyle H., Sunderland
²Hotton, C.W. St. James's Coll. S., Jersey
March, J.F. *o.* Licensed Victuallers' S., Lambeth
²Reakes, G.R. High S. for Boys, Croydon
Simmonite, C. *g.al.* Derwent H., Bamford
Smith, P.L. *d.* St. Leonards Coll. S.

Clare, R.C. Cambridge H., Norwich
²Collier, J.E. *d.* The College, Clevedon
²Green, W.P. Private tuition
²Johnson, E.N. Southport Modern S.
²Knight, A. St. Boniface's Coll., Plymouth
Matheson, F.S. *a.* County S., Liskeard
Nichols, A.A. *gm.* Waterlooville Coll, Cosham
²Oldreive, R.R. Forest Gate High S.
²Robinson, C. Whitchurch Gram. S.
Sharp, A.G. *al.* Manor H., Clapham Common
Sumner, H.J. Comm.S., Stratford-on-Avon
Smith, I.T.M. Grammar S., Devizes
Watson, F.B. Southdown Coll., Eastbourne

Armer, T. The College, Weston-s.-Mare
Barker, F. *d.* Westbury H., Southsea
²Bessant, F.R. Ryde House Comm. S., Ripley
Booty, F.C. *g.* King Edward VI. Middle S., Norwich
²Breakell, T.H. Grammar S., Fulwood, Preston
Clarke, E.S. *d.* Barton S., Wisbech
²Duckfield, W.E. King Edward VI. Middle S., Norwich
²Harrison, A. Beverley S., Barnes
Harrison, G.R. *al.* King Edward VI. Middle S., Norwich
Hill, L.G. St. Mary's Coll., Harlow
²Jode, S.E. Lancaster Coll., W. Norwood
²Moore, A.D.M. Thornton Heath School
Puddicombe, D.R. *al.* Scarborough College
²Radcliffe, H. Southport Modern S.
Spurgin, H.J. *e.* Blenheim H., Fareham
Sutcliffe, F.W. *al.* High S., South Shore, Blackpool
Wallis, W. *al.* Victoria Tutorial Coll., Buckingham Palace Rd., S.W.
²Watson, J.P. Hutton Gram. S.

Adams, W.J. *g.* Ryde House Comm. S., Ripley
Beadon, W. Ryde House Comm. S., Ripley
Clift, V.L. Jersey Modern S., St. Helier
²Ernest, A. Queensberry S., Longton
²Harris, R.C. Licensed Victuallers' S., Lambeth

Horswill, E.C. *d.* Grammar S., Ongar
Hubbard, J.W. Castle Hill S., W. Ealing
Jeffery, J.E. *f.* Steyning Gram. S.
²Kampe, G.E. High S. for Boys, Upper Hornsey Rise, N
²Nayler, G. Broomy Hill Acad., Hereford
²Norden, F.L. Craigie, Worthing
Norris, W.E. *d.* Cliftonville Coll, Margate
Smith, A.G. Gravesend Modern S.
²Woodall, W.C. Hutton Gram. S.

Bennett, A. Farnworth Gram. S.
Calvert, F. *s.a.al.* Gram. S., Scarborough
Colgate, A.W. *al.* Milton Coll., Bexley Heath
Edridge, A.H. Brentwood High S.
Fry, L.T. *bk.* Collegiate S., Bridgwater
Garnier, T.F. SS. Mary & Peter's S., Jersey
²Graves A.H.R. Finsbury Park College
²Gutch, C.G. Hillcroft S., Mortimer
Hamilton, T.O'H. *h.* Westbury H., Southsea
Hannett, F.W. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Howes, M.W. *d.* King Edward VI. Middle S., Norwich
Peters, W. *ge.* Highfield S., Chertsey
²Pocklington, W.R.J.P. Sandwich School
Reid, J.W. *d.* Maida Vale S., W
²Warrington, H.S. Archbp. Holgate's Gram. S., York

Brown, B.E. Ellesmere S., Harrogate
²Chapman, B.W. Gram. S., Scarborough
Day, J.M. *e.* Western Coll., Harrogate
²Jinman, N.F. High S. for Boys, Croydon
Judge, T. *e.gm.* The Palace S., Bewdley
²Lee, N. Oakes Inst., Walton, Liverpool
Lovett, E.W. Comm.S., Stratford-on-Avon
Pepin, A.F. *f.* Oxenford H., St. Lawrence, Jersey
²Piper, P.J. Private tuition
²Pullen, L.P. Winchester H., Bristol
Sandon, W.E. Ivel Bury S., Biggleswade
²Side, F. The Preston Gram. S., Stokesley
Thurlby, J. Eversley S., Stamford
Turner, W.J. *d.* Grammar S., Ongar
Waters, R.C. *d.* Farnworth Gram. S.
Weekes, C.W. Highfield S., Wandsworth Common

²Burbidge, N R. Eversley S., Stamford
²Collyer, T. *d.* King Edward VI. Middle S., Norwich
Cryer, T V. Steyning Gram. S.
Field, A.J. Cathcart Coll., Cathcart Hill, N.
Houghton, B.A. Gravesend Modern S.
²Lewis, L.A. Buckingham Place Acad., Portsmouth
Nott, R. *gm.* The Palace S., Bewdley
Thompson, P. *a.* King Edward VI. Middle S., Norwich
Woollard, W.T. *al.* Grammar S., Sale

²Ablitt, B.E. Chaloner's S., Braunton
Anderson, G.F. High S. for Boys, Croydon
Besle, J.R. *gm.f.* Grammar S., Shoreham
Brewer, A. *l.* Westbourne Rd. Prep. S., Sheffield
Carlyle, L.J. Collegiate S., Bridgwater
Collier, T.L. St. Dunstan's Coll., Margate
²Eckersley, A.I. Grammar S., Sale
Ewing, A.G. Bedford H., Folkestone
Gleaves, T.R. Mossley Hall S., Congleton
Gray, J.E. Steyne S., Worthing
How, C.P. *a.* Derwent H., Bamford
²Penwill, H.W. Grammar S., Newton Abbot
²Pinkerton, T.R. Highfield S., Wandsworth Common
²Shaw, C.E. Chadsmoor Boys' National S., Cannock
²Smith, H.A. Grammar S., East Finchley
Vernon, R.M.J. St. John's Coll., Finsbury Park
²Weller, C.G. *f.* St. Paul's H., St. Leonards-on-Sea

Barron, W.J. Steyne S., Worthing
Brinsden, F. Grammar S., Shoreham
Brown, D.F. Thornton Heath School
Davies, D.B. Christ Church Hr. Elem. S., Southport
Easter, H.W. Grammar S., Ongar
Eglin, A. High S., South Shore, Blackpool
Goldberg, J.H. *d.* Mission S. for Hebrew Children, Streatham Common
Hayward, J.H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
²Jarvis, A.C. Gravesend Modern S.
Kernick, O. *al.* Newquay College
Knowles, J.W. Barton S., Wisbech
²Lucas, H. Hutton Gram. S
²Marsden, C.E. Christ Church Hr. Elem. S., Southport
²Oakes, J. *d.* Farnworth Gram. S.
Owen, H.B. *al.* Oakes Inst., Walton, Liverpool
²Richards, W.B. Grammar S., Newton Abbot
Spreckley, A. *e.* Eversley S., Stamford
Wood, H. High S., South Shore, Blackpool

²Buchan, P.E. Froebel H., Devonport
Danby, H.N. *al.* Grammar S., Scarborough
Duffield, C.C. Waterlooville Coll., Cosham
Farrar, T.I. Arlington Park Coll., Chiswick

²Guy, D.S.E. The Kingsley S., Shifnal
Jennings, W H. Grammar S., Longsight, Manchester
Lane, H.C. *f* Licensed Victuallers' S., Lambeth
Neate, T.S. *al.* Waterlooville Coll., Cosham
²Neave, H. King Edward VI. Middle S., Norwich
Richards, B.H.F. *al.f.* Steyning Gram. S.
Roberts, T.H. *al.d.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Shapland, N.H. Hadfield H., St. Leonards-on-Sea
Symonds, H.V.B. *gm.* Grammar S., Shoreham
Wiltshire, W.G. Grammar S., Devizes
Wood, A.H. Farnworth Gram. S.

²Barley, G.J. Hillcroft S., Mortimer
Blake, W.L. Barton S., Wisbech
Butt, F.T.W. *g.* Wilton H., Exeter
Eason, F. Comm. S., Stratford-on-Avon
Eason, R. Comm. S., Stratford-on-Avon
Geige, H.W. King Edward VI. Middle S., Norwich
Gilbert, S. South Molton United Higher S.
²Godfrey, J.H. Brunswick H., Maidstone
²Hartnell-Sinclair, L. High S. for Boys, Croydon
Knott, H.P. *al.gm.* Littleton H., Knowle, Bristol
²Luce, C. Jersey Modern S., St. Helier
²March, L.F. Taunton School
²Mitchell, L.A. Langharne S., Southsea
²Nias, A.M. High S. for Boys, Croydon
Prior, H.R.T. King Edward VI. Middle S., Norwich
²Ramsden, A. St. Boniface's Coll., Plymouth
Robinson, J.G. Abbotsford S., Folkestone
Saer, H.E. Bedford H., Folkestone
²Salvidea, F. *sp.* Victoria Park S., Manchester
²Williams, W.R.B. United Methodist Coll., Shebbear
²Williamson, H.E. Lytham College

Dimmock, F.M. Cliftonville Coll., Margate
Fuller, C.H. Grammar S., Shoreham
²Gregory, W.J. Grammar S., Fulwood, Preston
²Jefferson, N. High S. for Boys, Croydon
Mackenzie, K.A. *a.* Thornton Heath School
Martin, H.W. *e.* Grammar S., St. Ives
²Norman, A. Brunswick H., Maidstone
²Rines N.B. Scarborough College
²Sa'eed, S. High. S. for Boys, Croydon
Sanders, F.E. *al.* Oakes Inst., Walton, Liverpool
²Swift, H.G. Private tuition
Thirtle, N.W. King Edward VI. Middle S., Norwich

Barnes, S.H. Tollington Park College, N.
Buckingham, J.s. Sunny Hill S., Ilfracombe
Clarke, T.W. *d.* Gram. S., Ongar
Eaton, C. *d.* Crewe Academy
Elgey, A. Argyle H., Sunderland
Kennard, W.D. *al.* High S. for Boys, Croydon
²Lemon, D.G. King Edward VI. Middle S.. Norwich
Mace, C.A. King Edward VI. Middle S., Norwich
McKnight, N. *d.* Southdown Coll., Eastbourne
Nosworthy, T.C. Pynsent's Gram. S., Chudleigh
Nuttall, D.K. Clifton Coll., Harrogate
Rowson, R.H. Penketh School
Sarchet, L.L. *al.* Froebel H., Devonport
Sargeant, S.H. Commercial Coll., Acton
²Thorrowgood, R.W.T. Grammar S., Chichester
Wardlow, C Westbourne Rd. Prep. S., Sheffield
Wehrheim, F.A. Cathcart Coll., Cathcart Hill, N.
White, A.W. *d.* Grammar S., Shoreham

Asbridge, W.H. Grosvenor Coll., Carlisle
Bardsley, C.G.C. *e.f.* Grammar S., Sale
Baughan, A.W. Private tuition
Brown, T.H. Uxbridge Preparatory S.
de Courcy Hamilton, J.A. *gm.* Herne H., Cliftonville, Margate
²Evans, L.H.P. St. Leonards Coll. S.
Henderson, J. Margate Commercial S.
²Hime, N.A. Claughton Coll. S., Birkenhead
²Keith, A.G. Commercial Coll., Acton
Lawrence, H.C. Langharne S., Southsea
²Le Breton, A. Jersey Modern S., St. Helier
Okey, T.K.A.G. Licensed Victuallers' S., Lambeth
Peggs, W.J. Barton S., Wisbech
²Rushton, G. Farnworth Gram. S.
Shenton, A.K. Wychwood S., Bournemouth
Thomas, R. Emlyn Gram. S., Newcastle Emlyn
Thompson, D.J. *d.* Cambridge H., Norwich
²Thomson, W.J. *d.* Commercial S., Maidstone
Tuck, D.B. St. Aubyn's, Woodford Green
Turner, A.B. Emwell S., Warminster
Voss, L.J. *al.* Plymstock Boys' S., Plymouth

Bilbe, H.A.B. Steyne S., Worthing
Blore, W.P. Comm. S., Stratford-on-Avon

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BOYS, 3RD CLASS, PASS—*Continued.*

Broad, E.T. *al.d.*
Bradley High S., Newton Abbot
Chorlton, A.E. *al.gm.* M'chester Warehousemen & Clerks' Orphan S., Cheadle Hulme
[2]Clarke, A.E. Grammar S., Margate
[2]Drane, D.H.
King Edward VI. Middle S., Norwich
[2]Dyer, W.E. The College, Clevedon
Ebbutt, F.C. *d.* High S. for Boys, Croydon
[2]Fraser, J.W. *f.* Victoria Park S., Manchester
Hammond, R.E.
Comm. S., Stratford-on-Avon
Harrison, J.A.
St. Martin's Gram. S., Scarborough
LeBrocq, C.
Harleston H., St. Lawrence, Jersey
Lucas, J. Jersey Modern S., St. Helier
Moore, C.H.
St. Martin's Gram. S., Scarborough
Moss, P.J. Brunswick House, Maidstone
New, R.H. *al.* St. Mary's Coll., Harlow
Poole, J. *gm.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Shoppee, M.C. *d.* Cliftonville Coll., Margate
Smith, E.F. Hutton Gram. S.
Stone, S.K. Gravesend Modern S.
Swann, A.B. Mossley Hall S., Congleton
[2]Whitechurch, C.G. Cawley S., Chichester
[2]Worthington, G. Grammar S., Sale

Badman, C.R. Gravesend Modern S.
Buckland, V.H. *al.* Grammar S., Clapham
Everett, W.G.A. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Faull, F. *d.* Grammar S., St. Ives
Foot, C.S.P. St. Aubyn's, Woodford Green
[2]Harries, D.E. Comm. S., Wood Green
Jackson, T.C. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
[2]Jennings, N. Grosvenor Coll., Carlisle
[2]King, W.O. Grammar S., Margate
Lale, J.W. Grammar S., Shoreham
[2]Molz, L.S. Gravesend Modern S.
Moore, G.A.R. *al.*
King Edward VI. Middle S., Norwich
Morris, H.J. Lytham College
[2]Newton, T.C. Derwent H., Bamford
[2]Owens, A.L. The Greystones, Scarborough
Thomson, S. Grammar S., Shoreham
Toll, R.W. Froebel H., Devonport
Wareham, S.W.
Bradley High S., Newton Abbot
Webber, L.A. *d.* Collegiate S., Bridgwater
Wheddon, W.A. Collegiate S., Bridgwater
Yates, A.C. *g.* St. Leonards Coll. S.

Atkins, T.
King Edward VI. Middle S., Norwich
[2]Baker, C.H. Broomy Hill Acad., Hereford
[2]Barnes, H.C. Grammar S, Shoreham
Baron, C.E. *gm.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Crossley, O.L. Bedford H., Folkestone
[2]Dodd, W.
Highfield S., Wandsworth Common
Downs, H. Jersey Modern S., St. Helier
Farr, L.C. *al.* Winchester H., Bristol
Folingsby, T.G. Gunnersbury S., Chiswick
Gresty, A.L. Penketh School
Hodgson, G. The Preston Gram. S., Stokesley
Hollas, W. Farnworth Gram. S.
Howes, A.C. *al.*
Alderman Norman's S., Norwich
Hunt, P. *al.* The College, Weston-s.-Mare
[2]Jenkins, J.P. Taunton School
Mackay, W.H.
Oxenford H., St. Lawrence, Jersey
Old, R.E. The Palace S., Bewdley
Palmer, H.O. *d.* Brunswick H., Maidstone
Sequeira, B.A. *al.d.*
St. John's Coll., Finsbury Park
[2]Smedley, H.E. Grammar S., Belper
[2]Smith, G.E. Ryde House Comm. S., Ripley
[2]Steer, W.L. Taunton School
[2]Stevens, J.S.R. Taunton School
Welch, J.N. Grammar S., Belper

Barnett, P.J. Winchester H., Bristol
Bush, A.G.
King Edward VI. Middle S., Norwich
[2]Clark, B.C. Froebel H., Devonport
Clarke, F. Margate Commercial S.
[2]Clarke, H.C. Froebel H., Devonport
Coldham, P.C. Barton School, Wisbech
Cowlishaw, L. *al.* Bridlington College
Dollin, F.E. *al.* Froebel H., Devonport
Fairweather, L.J.E.
St. Mary's Coll., Harlow
Firth, N. *al.* Bridlington College
French, L. Wilton H., Exeter
[2]Grapel, W.V. High S. for Boys, Croydon
[2]Hancock, O.L. Newquay College
Hansen, C.F. *al.* Steyning Gram. S.
Lye, W.T. Wilsford H., Devizes
[2]Hughes, W.F. Private tuition
[2]Mariano, P.A.
St Boniface's Coll., Plymouth
[2]Markham, S.D. Chaloner's S., Braunton
[2]McCabe, S. Commercial S., Maidstone
Myerscough, J. Lancaster Coll., Morecambe
Pool, J.B. *al.* St. James' Coll. S., Jersey
Salmon, E.C. Comm. S., Stratford-on-Avon
[2]St. George, L.C. Grammar S., Margate
[2]Winship, H. Bailey S., Durham

[2]Alford, C.R.
Arlington Park Coll., Chiswick
Bulled, H. South Molton United Higher S.
Coles, W.L.C. *al.* Cliftonville Coll., Margate
Collins, H.G. Fairlawn S., Leytonstone
Dredge, F.T.L. Cliftonville Coll., Margate
Foulsham, F.U.
St. Dunstan's Coll., Margate
Gebbett, A. South Molton United Higher S.
Graves, C.H. *d.*
High S., South Shore, Blackpool
Hart, L.R. Malvern H., Folkestone
Hetherton, A. *al.* Grammar S., Scarborough
[2]James, J. Springfield Coll., Acton
[2]Miller, N.J.
Sutton-in-Ashfield Higher Standard S.
Morgan, J. Farnworth Gram. S.
Springthorpe, L. Eversley S., Stamford
[2]Whyman, W.A. Gram. S., Blackpool
Wilson, W.S. *d.* The Palace S., Bewdley
[2]Worrall, J.B.
Cambridge H., Camden Rd., N.

Aitkin, R.S. *a.* Steyne S., Worthing
Ashley, W.H. Comm. S., Stratford-on-Avon
[2]Bowden, F.R.
King Edward VI. Middle S., Norwich
Bowers, J.F. Grammar S., Ongar
Brayley, A. South Molton United Higher S.
[2]Crampin, E.H. Private tuition
[2]Elce, H. Lancaster Coll., Morecambe
Gammans, L.D. Langharne S., Southsea
[2]Goddard, J.H. Western Coll., Harrogate
Gowlett, H.S. Cliftonville Coll., Margate
[2]Haworth, F. Lancaster Coll., Morecambe
Hunt, W.H. Cambridge H., Norwich
[2]Laidman, T. Handel Coll., Southampton
Page, H.W. Taunton School
Putland, A.K.
Hadfield H., St. Leonards-on-Sea
Underdown, H. Brunswick H., Maidstone
[2]Wadbrook, W.H.E.
Southampton Boys' Coll. & High S.
[2]Walker, S.R.
King Edward VI. Middle S., Norwich
Way, A.B. Grammar S., Shoreham
Woodward, J.J. Brunswick H., Maidstone
Wyatt, B.T. *d.* Taunton H., Brighton

[2]Boyd, W. Bailey S., Durham
[2]Brimmell, J. Langharne S., Southsea
Buckingham, R. Sunny Hill S., Ilfracombe
[2]Cardy, R.J. Clair-Val S., Gorey, Jersey
Cherry, C.H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Clare, S.B. Farnworth Gram. S.
Davis, E.R. Wilsford H., Devizes
Davy, T.S. *al.gm.* Clifton Coll., Harrogate
[2]Fairbairn, E.C. High S. for Boys, Croydon
[2]Gardner-Leader, F. The Ferns, Thatcham
Hart, F.A. Oakes Inst., Walton, Liverpool
Highton, L.R.
Christ Church Hr. Elem. S., Southport
Hodgkiss, E. *al.* Farnworth Gram. S.
[2]Kelleway, M.J. Grammar S., Shoreham
Luscombe, L.
Bradley High S., Newton Abbot
Oates, E.T. Gravesend Modern S.
Pagniez, H.V. St. Mary's Coll., Harlow
Rumsey, P.C. *d.* Commercial S., Maidstone
Russell, W.C. *d.*
Bourne Coll., Quinton, Birmingham
Shoosmith, W. Park House, Broadstairs
[2]Skyrme, F.J. *d.* Ousegate S., Selby
Taylor, L.G. *e.* High S. for Boys, Croydon
[2]Taylor, T.C.
Longwood Gram. S., Huddersfield
Traise, E.F. *d.* Eversley S., Stamford
[2]West, R.V.L. Thornton Heath School

Barnes, J.A.
Licensed Victuallers' S., Lambeth
Bernardson, I. *a.* Mission S. for Hebrew Children, Streatham Common
Buchanan, R.V.M.
Wychwood S., Bournemouth
Chancellor, D.N. *al.*
High S., Upper Hornsey Rise, N.
Cooksey, W.O. Steyning Gram. S.
Cooper, F.S.T. *al.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Crafter, H.C. *al.*
Oakes Inst., Walton, Liverpool
Craig, J.G. Gunnersbury S., Chiswick
Danby, R.A. Grammar S., Scarborough
Day, R.E. *bk.* Brunswick H., Maidstone
Denton, H.F. New Coll., Harrogate
Easthope, B.S. Grammar S., Belper
[2]Fewing, H. St. Boniface's Coll., Plymouth
Freedman, H. Argyle H., Sunderland
Gale, P.A. Fairlawn S., Leytonstone
[2]Gdanitz, F.O. Boys' Coll. S., Aldershot
[2]Grant, G.S.
Bourne Coll., Quinton, Birmingham
[2]Hunt, A.S. Bewdley Gram. S.
[2]Jones, J.E.
Emlyn Gram. S., Newcastle Emlyn
Locke, F.A. Taunton School
Mundy, F.
Oxenford H., St. Lawrence, Jersey
Redcliffe, A.E. *h.* Hoe Gram. S., Plymouth
Robin, E de J. Froebel H., Devonport
Tunnard, R.W. Barton S., Wisbech
Turpin, D. Comm. S., Wood Green
Verner, C. *al.* Highbury Park School
Warwick, R.G.G. Blenheim H., Fareham
Williams, M.H. *gm.* Grammar S., Margate

Beetham, C.W. Gram. S., Fulwood, Preston
Cave, E.W. *al.* St. Mary's Coll., Harlow
d'Avigdor, A.H. St. Mary's Coll., Harlow
Dexter, L.W. Ryde House Comm. S., Ripley
Harrison, V. Hoylake College
Horne, J.L. Hutton Gram. S.
[2]Howard, H. Crewe Academy
Johnson, R. St. Dunstan's Coll., Margate
Laslett, H. Farnworth Gram. S.
Lewis, T.A. Steyne S., Worthing
McQueen, D.R. *gm.*
King Edward VI. Middle S., Norwich
Morris, T.H. Taunton School
[2]Nettleton, A.
The Preston Gram. S., Stokesley
Parnell, A.R. Godwin Coll., Margate
Redman, R. Hutton Gram. S.
Rogers, P.W. *al.*
South Molton United Higher S.
Stanford, J.H. Gravesend Modern S.
Towers, J.A. Derwent H., Bamford
Woollacott, A. *d.*
South Molton United Higher S.

Atkinson, W. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Bolton, E. Grammar S., Shoreham
Bullough, J.E. Farnworth Gram. S.
Cohen, P.H. Kendrick S., Reading
[2]Darlington, H.L.
Claughton Coll. S., Birkenhead
Durant, J.H. Priory Coll., Hornsey
Fawcett, C.H. Wychwood S. Bournemouth
Frampton, R.E. Steyne S., Worthing
Gilmour, E.S.
Oakes Inst., Walton, Liverpool
Hardy, G.D. High S. for Boys, Croydon
Jennings, H.C. Radnor S., Redhill
Kitcat, G.I. St. Dunstan's Coll., Margate
Malsbury, J. Comm. S., Stratford-on-Avon
McLeod, H. *d.*
Oakes Inst., Walton, Liverpool
[2]Megginson, C. Scarborough College
Price, T.D. Kingsholme S., Weston-s.-Mare
Remmington, A.E. Thornton Heath School
Roberts, Z. Grosvenor Coll., Carlisle
Rowe, T. Grammar S., Ongar
[2]Smith, A.E.H. Bewdley Gram. S.
Stening, A.H. Ryde House Comm. S., Ripley
Widdowson, J.J. Gram. S., Shoreham

[2]Barton, A.H. Willow House Coll., Walsall
Bird, E. Lytham College
Dawson, C.W. Commercial Coll., Acton
De Bourcier, H.L.
Jersey Modern S., St. Helier
Durrant, G. Oakes Inst., Walton, Liverpool
Fifield, F.E. Thornton Heath School
Hyde, H.F. St. John's Coll., Finsbury Park
Johnston, J. Mount Radford S., Exeter
[2]Jones, B.A. Claughton Coll. S., Birkenhead
[2]Lockyer, W.E. Handel Coll., Southampton
Milton, F.F. Gravesend Modern S.
Preston, P.W. Grammar S., Shoreham
Rowland, P.W. Abbotsford S., Folkestone
Royley, G.C. Farnworth Gram. S.
Smith, T.R. Cliftonville Coll., Margate

Barton, G.H.
Oakes Inst., Walton, Liverpool
Burrows, C.J. Comm. S., Stratford-on-Avon
Cassin, B.Van V. St. Mary's Coll., Harlow
Currington, S.M. *al.* Barton S., Wisbech
[2]Dowson, J.
The Preston Gram. S., Stokesley
Dunster, T.B.
King Edward VI. Middle S., Norwich
Fell, W.R. Christ Church S., Bootle
[2]Gasking, C.T. Private tuition
Hunt, W.J. Ryde House Comm. S., Ripley
King, A.F. *al.* St. Mary's Coll., Harlow
King, W. Hoylake College
Land, L.N. Grammar S., Shoreham
Lee, H.F. *al.* Taunton School
McLellan, R.B. Taunton School
Norman, W. Grosvenor Coll., Carlisle
Platt, J.T. Grammar S., Fulwood, Preston
Purry, A.B. Southdown Coll., Eastbourne
Robinson, J.N. Hutton Gram. S.
Schute, E.B. Clifton Coll., Harrogate
Scott, A. Portland Coll., Chiswick
Tadman, W.
St. Martin's Gram. S., Scarborough
Waight, D.E. St. Mary's Coll., Harlow

Ainsley, F. *d.* Bailey S., Durham
Beadle, I.A. Brunswick H., Maidstone
Brooks, E.J. Chaloner's S., Braunton
Clough, N. Bridlington College
Crease, A.J.P. The College, Clevedon
Evens, H. Grammar S., Southend-on-Sea
Jones, H.N.S. Collegiate S., Bridgwater
Lee, J.G. Taunton H., Brighton
Lorenzen, A.E. Grammar S., East Finchley
McTurk, H.A.D. Brentwood High S.
Morris, T.H. *al.* Hoe Gram. S., Plymouth
Ollive, L.H. Grammar S., Margate
Porritt, A. Huddersfield Coll. Modern S.
Shorter, B.J. Gravesend Modern S.
Smith, D.A. Grammar S., Ongar
Sugg, F.R. Oakes Inst., Walton, Liverpool
Tarr, F.W. Ryde House Comm. S., Ripley
Vicarey, R. *al.* Comm. S., Wood Green
Wheater, W.L. Clifton Coll., Harrogate
Winship, A. *l.* Bailey S., Durham
Wood, A.C.
Bickerton H., Birkdale, Southport

Ashton, A.J. Hoe Gram. S., Plymouth
Billot, P.E. Jersey Modern S., St. Helier
Boys, C.D.B. Castle Hill S., W. Ealing
Briggs, G.G. Bridlington College
Burnand, C.L.
Southdown Coll., Eastbourne
Carling, A. Private tuition
Carman, C.R. Blenheim H., Fareham
Clements, E.T. Kendrick S., Reading
Cliffe, C.R. Taunton School
Cornelius, H.C.J. *al*
Bradley High S., Newton Abbot
Cross, W.G. Grammar S., Fulwood, Preston
Greenslade, V.E.L.
Bradley High S., Newton Abbot
Harvey, A. Brunswick H., Maidstone
Ibbotson, H.R. Hutton Gram. S.
Jeffrey, R. Highfield S., Chertsey
Marshall, E. Grammar S., Shoreham
Reeves, W.M. Emwell S., Warminster
Rush, W. Grosvenor Coll., Carlisle
Smith, D. Margate Commercial S.
Smith, N.H. Collegiate S., Reading
Verrall, S.R. Gram. S., Ongar
[2]Walker, G.S. Farnham Gram. S.
[2]Walker, H.E. Willow House Coll., Walsall
Walton, C.D. Penketh School

Alford, H.E. St. Dunstan's Coll., Margate
Barton, J.L. Oakes Inst., Walton, Liverpool
[2]Berry, H. Private tuition
Bouts, H. Margate Commercial S.
[2]Carrington, R.W. Taunton School
Heyworth, W.N.
Kilgrimol S., St. Annes-on-Sea
Jolliffe, J.S. Holsworthy Middle S.
Lyne, G.H. Radnor S., Redhill
[2]Nicholls, H.F. Cromwell High S., Putney
Pigg, R.W.P. Grosvenor Coll., Carlisle
[2]Potter, W.B. Private tuition
Priest, W.G. Richmond Hill School
Reeves, G.V. Taunton School
Rigg, J. Grosvenor Coll., Carlisle
Stratford, F.J. *bk.* Grammar S., Ongar
Thompson, A.W.M. Rosemont H., Newport

Abram, R. Hutton Gram. S.
Ash, J.B. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Baker, E.G. Gunnersbury S., Chiswick
Baker, L.G.
King Edward VI. Middle S., Norwich
Barber, J. Christ Church S., Bootle
Beardsall, S.E. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Bryant, C.G. Froebel H., Devonport
[2]Collins, W.
Sutton-in-Ashfield Hr. Standard S.
[2]Evans, W.
Kingsholme S., Weston-super-Mare
Findlay, W.D.H.
King Edward VI. Middle S., Norwich
Fuller, H.S. *al.* St. Mary's Coll., Harlow
Gamble, J.F. The Harrogate Modern Coll.
Goodale, E.W.
St. Catherine's Coll., Richmond
Grey, C. Alcester Grammar S.
Hall, E.E. Highbury Park School
Higson, J.K. *al.*
Oakes Inst., Walton, Liverpool
Holloway, L. The Harrogate Modern Coll.
Hoyles, H.J. Comm. S., Stratford-on-Avon
Humphry, H.B. South Norwood College
Karnofsky, M.H. Private tuition
Langford, H. Lancaster Coll., W. Norwood
Marten, C.W.
St. Martin's Gram. S., Scarborough
Pollard, F.G. St. Leonards Coll. S.
Price, H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
[2]Rahmy, M.A. King's S., Warwick
Schreier, B. Gram. S., Shoreham
Tebbitt, M.L. Abbotshill, Kilburn
Yates, A.
Bourne Coll., Quinton, Birmingham

Bourne, S.A. Derwent H., Bamford
Comes, L.A. Abbotsford S., Folkestone
Cove, H.E. Grammar S., Ongar
Davies, D.M.
Emlyn Gram. S., Newcastle Emlyn
Dickson, A.H. Holsworthy Middle S.
Gaudard, P.T. St. John's Coll., Brixton
Hartley, H. Farnworth Gram. S.
Hayhurst, O.
Grammar S., Fulwood, Preston
Holmes, S.J. Grammar S., Ongar
[2]Hughes, J. Huddersfield Coll. Modern S.
Keepin, A.W. Caversham H., Caversham
[2]Kevern, C. Private tuition
Melton, G.G.
King Edward VI. Middle S., Norwich
Pitt, B.E. Eversley S., Stamford
[2]Rundle, R. Newquay College
Stanners, E.C. The Palace S., Bewdley
Watters, H.R. Langharne S., Southsea
Whitehead, A.D. Grammar S., Shoreham
[2]Williams, S. Private tuition

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BOYS, 3RD CLASS, PASS—*Continued.*

Bradley, B. Ryde House Comm. S., Ripley
Bremner, G.B.S.
Lancaster Coll., W. Norwood
de Conrey, G.L. Eversley S., Stamford
Edwards, A.S. St. Deiniol's, Bangor
Falkner, V.M. *al.*
High S. for Boys, Croydon
Griffin, H.W. Scarborough College
²Hargreaves, C.G. Rusholme High S.
²Howse, F.W.F. Grammar S., Margate
Huntley, E.S. *d.*
Elmhurst S., Kingston-on-Thames
Jordan, J.B. Grosvenor Coll., Carlisle
LeMasurier, P.R. West End S., Jersey
Lowe, A.V.
Bourne Coll., Quinton, Birmingham
Mason, H. High S. for Boys, Croydon
Pink, R.T. Blenheim H., Fareham
³Pretty, C.H. Grammar S., Redditch
²Reed, F.W. Chaloner's S., Braunton
Risely, J.W. Thornton Heath School
Sandford, E.W. Eversley S., Stamford
Simpson, M.McR. Godwin Coll., Margate
Thompson, R.D. Grammar S., Shoreham
Walkden, J.N. *gm.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme

Akhurst, N.W. Sandwich School
Bartlett, J.S. St. John's Coll., Brixton
Blackburn, F.
Bickerton H., Birkdale, Southport
Burgess, K.R. Scarborough College
Byworth, H.A.
St. Aubyn's, Woodford Green
Coope, E.T. Hutton Gram. S.
²Craig, C.C. Claughton Coll. S., Birkenhead
Elliott, F.W. Taunton School
Frampton, S.W.
Cambridge H., Camden Rd., N.
Gordon-Ralph, L. *s.* Henfield Gram. S.
Hazel, H. Barton S., Wisbech
Howse, J.H. The College, Clevedon
Moore, T.G. Collett H., Bournemouth
Morcom, F.C. County S., Liskeard
Olliver, J. Margate Commercial S.
Pougher, T.E.
Bourne Coll., Quinton, Birmingham
Rigby, F.J. Willow House Coll., Walsall
Stansby, J.M. Grammar S., Ongar
Stockley, M.G. High S. for Boys, Croydon
Thompson, A.F.W. Rosemont H., Newport
Tingley, W.G. Grammar S., Shoreham
Vickers, J.C. Oakes Inst., Walton, Liverpool
White, H.G. Handel Coll., Southampton

Brackenbury, F.
King Edward VI. Middle S., Norwich
Buck, R.A. Weymouth Modern School
Chapman, F. Barton School, Wisbech
Cole, M. Highfield S., Chertsey
Gale, H.G. Blenheim H., Fareham
Gillett, F.E. St. John's Coll., Brixton
³Jukes, M. Taunton School
Laborde, H. Hoe Gram. S., Plymouth
Linney, L.A. Grammar S., Shoreham
Mabbott, T.A.D. Scarborough College
²Mahler, A.K.
Grammar S., Chorlton-cum-Hardy
Millard, W.H. The College, Clevedon
Moring, F. Collegiate S., Reading
Murphy, D.V. Hutton Gram. S.
Noakes, J. Margate Commercial S.
Ogden, J.H.
High S., South Shore, Blackpool
Parker, C.L.
Bickerton H., Birkdale, Southport
Pickup, S.F.
Bickerton H., Birkdale, Southport
Swan, E.M. Steyne S., Worthing
Taplin, C.L.L. Kendrick S., Reading
Thomas, G.H.
St. Aubyn's, Woodford Green
Tucker, N. Chaloner's S., Braunton
²Turle, G.F. Taunton School
Warren, E.H. Collett H., Bournemouth

Badman, W.H. Gravesend Modern S.
Duncan, R.L.
Woolston Coll., Nr. Southampton
Evans, G. Steyning Gram. S.
Harrison, J. Penketh School
Howard, H.
King Edward VI. Middle S., Norwich
Johnson, H.E. Taunton School
Kimfull, F.W.
Hadfield H., St. Leonards-on-Sea
Pitchford, A.R. Grammar S., Shoreham
Renison, H. Penketh School
Scott, K.C. Private tuition
Shuttleworth, E.R.
Oxenford H., St. Lawrence, Jersey
Smyth, F.W.L. Mary Street H., Taunton
Ward, J.G.
King Edward VI. Middle S., Norwich
²Warner, B.T. Whitchurch Gram. S
Wiles, M.M. Grammar S., Devizes

Bacon, H.W. High S. for Boys, Croydon
Baker, A.T. Weymouth Modern School
Bedford, W. The Palace S., Bewdley
Brooks, M.C.C. Brentwood High S.
Cooper, L. Highfield S., Chertsey
Cowie, J.D. Cliftonville Coll., Margate
Davey, A.R. Wilton Grove S., Taunton
Earl, E.A. Hoe Gram. S., Plymouth
Eastwood, F. Huddersfield Coll. Modern S.
Evans, A.J. Taunton H., Brighton
Gregg, G.P. Kilgrimol S., St. Annes-on-Sea
Hammond, W.R. Gravesend Modern S.
Hobden, R.D. Gram. S., Shoreham
Jackson, S.L. Uxbridge Preparatory S.
Meade, R.O. Commercial Coll., Acton
Perolz, N. Priory Coll., Hornsey
Saundry, E.A. Grammar S., St. Ives
Searle, A.E.T. The College, Clevedon
Sirajud-Din, D.M. Private tuition
Smith, S.H. Steyne School, Worthing

Beer, R.G. Cliftonville Coll., Margate
²Brough, W. *d.* St. Luke's School, Leek
Chapman, E.
Grammar S., Longsight, Manchester
Chappell, L.F. Grammar S., Ongar
Cole, G. Oakes Inst., Walton, Liverpool
Cramp, C.J. Grammar S., Shoreham.
Crowe, D.R. *al.* High S. for Boys, Croydon
Crutchley, P.St.J.
Oakes Inst., Walton, Liverpool
Dyer, F.J. Chaloner's S., Braunton
Highwood, C.J. Brunswick H., Maidstone
Knee, N.H. The College, Clevedon
Milroy, A.A.
Oakes Inst., Walton, Liverpool
Prizeman, F. *d.* Chaloner's S., Braunton
Smith, A. Ryde House Comm. S., Ripley
Smyter, H.D. Grammar S., Shoreham
²Southwood, J.E.C. Keyford Coll., Frome
Tune, T.F. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Wilkin, A.E.
King Edward VI. Middle S., Norwich

Anderson, F.J. Grammar S., Ongar
Ashcroft, G.
Bickerton H., Birkdale, Southport
Baden, P. Gunnersbury S., Chiswick
Baeldean, J.H.G. *f.* Athol H., Brighton
Black, A.N. Taunton School
Bryce, K. Mall Rd. Middle S., Hammersmith
Chaplin, P. St. Mary's Coll., Harlow
Clare, G.T. Farnworth Gram. S.
Ford, H.W. Ryde House Comm. S., Ripley
Herbert, A.J. Barton S., Wisbech
Hounsom, W.A.F. Kendrick S., Reading
Kantorowicz, C.G. Clifton Coll., Harrogate
²Lang-Browne, A.
The School, Wellington Rd., Taunton
Letheren, E.H.N.
Oakes Inst., Walton, Liverpool
Mills, E.C. Alcester Gram. S.
²Murlitt, G.J.
King Edward VI. Middle S., Norwich
Needham, H. Kilgrimol S., St. Annes-on-S.
Nevard, C.R. St. John's Coll., Brixton
Palmer, S.L. Cambridge H., Norwich
Pigott, E.W. Manor H., Clapham Common
Reid, E.R. *a.d.*
Bickerton H., Birkdale, Southport
Roper, W.F. Hoe Gram. S., Plymouth
Smith, H.W. Eversley S., Stamford
²Sparkes, G.H. Taunton School
Spawton, F.M.C.
Breydon H., Bournemouth
²Wildy, C.W. Private tuition

Blyth, H.E.
King Edward VI. Middle S., Norwich
Braden, R. Margate Commercial S.
Bradley, H.E. St. Winifred's, Torquay
Carbines, J.C. *al.*
Oakes Inst., Walton, Liverpool
Dyer, P.O. Chaloner's S., Braunton
²Foulkes, W. Crewe Academy
Fullerton, F.
Kilgrimol S., St. Annes-on-Sea
Harker, J.E. Grammar S., Shoreham
Johnson, G.A. Lytham College
Kelvin, G.D. Grosvenor Coll., Carlisle
Morgan, D.B. The College, Weston-s.-Mare
Oxtoby, F.G.
St. Martin's Gram. S., Scarborough
Paddock, G.W. Grammar S., Ealing
Pearman, J.C. The Palace S., Bewdley
Pennington, G.
The Greystones, Scarborough
Poole-Connor, M. Arundel H., Surbiton
Powell, G.A. *e.* Blenheim H., Fareham
Stokes, F.W. Ryde House Comm. S., Ripley
Watkins, J.P.
Oakes Inst., Walton, Liverpool
White, J.A. St. Dunstan's Coll., Margate
Wilkinson, B.
King Edward VI. Middle S., Norwich

²Bowden, H.P.
King Edward VI. Middle S., Norwich
²Chamberlain, T. Taunton School
Eyre, F. Mossley Hall S., Congleton
Horne, J.H. The College, Weston-s.-Mare
Horne, S.F.
Cathcart Coll., Cathcart Hill, N.
Humphreys, L.
Oakes Inst., Walton, Liverpool
Jackson, J.E. High S., Market Drayton
Lawrence, N.A. *f.* Bedford H., Folkestone
Marlee, N.A. Argyle H., Sunderland
Myhill, W.R. Saham Coll., Watton
Needham, R.A. Grammar S., Shoreham
Norton, J.H. Elm H., Southend-on-Sea
Reynolds, E.S.
Oakes Inst., Walton, Liverpool
Stansby, J.W. *d.* Grammar S., Ongar
Syder, W.S.
King Edward VI. Middle S., Norwich
Taylor, G.C. The Palace S., Bewdley
Ward, G. Bickerton H., Birkdale Southport
Wells, T. Margate Commercial S.

Carman, P. Margate Commercial S.
²Crouch, W.A. Ryde House-Comm. S., Ripley
Gardner, E.J. Swindon High S.
Grape, D.H. Lancaster Coll., W. Norwood
Humphrey, A.H. Barton S., Wisbech
²McCarthy, E.J.
W. Jesmond Senior S., Newcastle-on-T.
Norman, R.W. Grosvenor Coll., Carlisle
Parren, L. Barton S., Wisbech
Peaty, L.F. Castle Hill S., W. Ealing
Potter, C.W. Southdown Coll., Eastbourne
Richmond, D.E. St. Leonards Coll. S.
²Simpson, J. Crewe Academy
Smedley, P.E. Grammar S., Belper
Soper, L.V. Taunton School
White, G. Newquay College

²Akef, H.T. King's S., Warwick
²Dinnis, W.W. Newquay College
Hinde, C. Grammar S., Ongar
Hudson, T.A. Ousegate S., Selby
Perry, L.E. Willow House Coll., Walsall
Shepherd, G.E.
Bickerton H., Birkdale, Southport
Williamson, T.A. *al.*
St. Mary's Coll., Harlow
Wright, R.F. Collegiate S., Reading

Barnett, P.B.
Bickerton H., Birkdale, Southport
²Birkett, R.A. Lancaster Coll., Morecambe
²Bolton, H.A.
Bourne Coll., Quinton, Birmingham
Dyer, R.B. Taunton School
Gannicliffe, A.L. The College, Clevedon
Gifford, A.W. York H., Folkestone
Hansford, A.U. Grammar S., Shoreham
Huntley, W.J.
Elmhurst S., Kingston-on-Thames
Kirkham, I. Hutton Gram. S.
Lace, A.C. Haughton S., York
McConnell, J.H. Grammar S., Shoreham
Muspratt, K.K.
Wychwood S., Bournemouth
Rowbottom, H.A.
King Edward VI. Middle S. Norwich
Shackleton, J. Lytham College
Simpson, A.E. Western Coll., Harrogate
Wiltshire, D.C. Collett H., Bournemouth

Bolton, T.E.
Bourne Coll., Quinton, Birmingham
Collings, J.I. Hoe Gram. S., Plymouth
Edridge, C.B. Brentwood High S.
Goldman, L.H. Maida Vale School, W.
Higham, C. Cambridge H., Camden Rd., N.
Hodgkinson, F.V.
Mossley Hall S., Congleton
Jackson, J. Lancaster Coll., Morecambe
Knowles, S. Western Coll., Harrogate
Leigh, W.M. 57 Lansdowne Street, Hove
²Lucas, M. Ryde House Comm. S., Ripley
Macfarlane, J.A. St. Mary's Coll., Harlow

Cottrell, J.B.
Kingsholme S., Weston-s.-Mare
Minshall, F.B. High S., Market Drayton
Mitchell, F.E. *d.* Taunton School
Prichard, H.E. Taunton School
Taylor, E.C. Brunswick H., Maidstone
Webb, N.E. Swindon High School
White, P. Derwent H., Bamford

Bailey, H.G.C.
Buckingham Place Acad., Portsmouth
Goldberg, C. Maida Vale School, W.
Holden, F. Gram. S., Belper
Lamb, W.T. The Kingsley S., Shifnal
²Lauderdale, W.A.
Ryde House Comm. S., Ripley
Reuter, L. Mission S. for Hebrew Children, Streatham Common
Snoh Private tuition
Springate, E.C. Clair-Val S., Gorey, Jersey
Tanton, C.H. St. Leonards Coll. S.
²Tremain, R. Newquay College
Walker, W.J. Lancaster Coll., Morecambe
White, C. Tutorial S., Penarth
²Wild, A.R. Whitchurch Gram. S.
Wimlett, A.E. Comm. S., Stratford-on-Avon

Benwell, B.W. Grammar S., Ongar
Bonck, H.E. Grammar S., Shoreham
Flowers, J.A. Taunton H., Brighton
Gordon, K.M. Ellesmere S., Harrogate
Guest, N.S. The Palace S., Bewdley
Hunt, B.O. Taunton H., Brighton
Mannering, R.S. Taunton H., Brighton
Playdon, A.J.
Woolston Coll., nr. Southampton
²Preston, G.R.
Ryde House Comm. S., Ripley
Soper, S.H. *d.* Taunton School
Wilcock, W.C. Ansdell School
²Wreford, B. Private tuition

Bridgman, L.
Cambridge H., Camden Rd., N.
Cole, J.C.O.
Arlington Park Coll., Chiswick
Collett, O. Alcester Grammar S.
Dean, A.E.
Bickerton H., Birkdale, Southport
Eydmann, A.H.
Arlington Park Coll., Chiswick
Heap, J.A. Lytham College
McGregor, J.A.
Oakes Inst., Walton, Liverpool
Parrott, L.L. St. Mary's Coll., Harlow
Piller, H.J. St. Mary's Coll, Harlow
Towler, H. High S. for Boys, Croydon
Woodford, W.
The Greystones, Scarborough

Barron, T.E.
Convent Day S., St. Leonards-on-Sea
Deans, W. Boys' Coll. S., Aldershot
Freeman, C.N. High S. for Boys, Croydon
Higson, V.E.
Oakes Inst., Walton, Liverpool
Howes, H.
Bourne Coll., Quinton, Birmingham
Jones, A.S. Cambridge H., Camden Rd., N.
Lee, H. Highfield S., Chertsey
²Lesmond, G.L. Private tuition
McKerrow, E.W.
Bickerton H., Birkdale, Southport
Nock, H.S. The Palace S., Bewdley
Phillips, E.A. Collegiate S., Reading
Ricketts, D.T. Bedford H., Folkestone
²Romney, C.A. Taunton School
Rutter, F.W. Bailey S., Durham
Sibson, F.H. Ellesmere S., Harrogate
Thurnhill, E.L. Hutton Gram. S.
Treglown, J. Penzance Comm. S.
Walls, R.J. Penketh School
Weber, L.
Oxford Coll., Waterloo, Liverpool
Worthington, H.B.
High S. for Boys, Croydon

Adams, V.L. Ellesmere S., Harrogate
Christopher, E.O. Newquay College
Critchley, F. *d.* Lytham College
Dudley, G.R. Taunton School
Fileman, H. Highbury Park S.
Garth, B. St. Deiniol's, Bangor
Jaggar, R. New Coll., Harrogate
Kiddle, C.F. The College, Clevedon
LeLievre, S.St.J.
Jersey Modern S., St. Helier
Shepherd, H.N. High S. for Boys, Croydon
Smethurst, F.H.
Kilgrimol S., St. Annes-on-Sea
White, G.R. Hoe Gram. S., Plymouth
Whitelaw, D.H.
King Edward VI. Middle S., Norwich

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CLASS LIST—GIRLS.

(*For list of abbreviations, see page* 86.)

FIRST CLASS [or SENIOR].

Honours Division.

Bennell, M. *s.e.g.bk.lt.p.*
Crouch End High S., Hornsey
Rowtcliff, A.G. *s.e.* Holsworthy Middle S.
Green, J.M. *s.e.ms.*
Crouch End High S., Hornsey
Gieve, G.M. *s.d.*
Crouch End High S., Hornsey
Truscott, D.V.R. *bk.d.*
Crouch End High S., Hornsey

FIRST CLASS [or SENIOR].

Pass Division.

Greenland, E.I. *s.e.* Emwell S., Warminster
Cheatle, H.B. *s.do.* Milton H., Atherstone
Ratcliffe, K.B. Private tuition
Keen, F.H. Private tuition
Grattan, M.Mc.D. Beighton H., Sheffield
Buck, D.G. *s.* Emwell S., Warminster
Taylor, D.A.W. *e.* Private tuition
Moran, A.G. Private tuition
Tylcoat, L. *e.* Private tuition
LeMontais, L.R.deL. *f.*
St. James' Ladies' S., Jersey
Waddell, C. *e.*
Liverpool Coll., Huyton, Liverpool
Marshall, D.S. *d.* London Coll., Goodmayes
Parkin, M.M. *d.* Wood End, Buxton
Jordan, K.C.S. Private tuition
Taylor, G. *e.* Private tuition
Williams, N. Crouch End High S., Hornsey
Frank, G. Beighton H., Sheffield
Harris, L.M. Emwell S., Warminster
Bromley, A.
Brunt's Technical S., Mansfield
Turner, A.V. *do.* Private tuition
Day, D. Cambridge H., Camden Rd., N.
Gardner, G.O. Lynn H., Croydon
Speed, C.M. Beaurivage S., Weston-s.-Mare
Johnson, E.
Secondary S. for Girls, Peterborough
Forbes, H.C. Argyle H., Sunderland
Walker, D.B. St. Edmundsbury, Cardiff
Harrop, F. Inglewood S., Mobberley

SECOND CLASS [or JUNIOR].

Honours Division.

Nokes, C.M. *s.e.f.d.do.*
Crouch End High S., Hornsey
Kearns, E. *al.phys.d.*
Loreto Conv., Hulme, Manchester
Adams, L.C. *e.a.al.f.mu.*
Oakover Girls' S., Burnham
Dewey, M.D. *f.* Devizes Secondary S.
Watt, E.I. *s.al.* Crouch End High S., Hornsey
Meaby, E.D.A. *s.e.f.mu.do.*
Hemdean H., Caversham
Dunkley, L.R. *al.f.d.*
Weymouth P.-T. Centre
King, G.H. *f.ch.* Devizes Secondary S.
Bevan, C.A. *s.mu.*
Oakover Girls' S., Burnham
Forbes, W.M. *s.f.mu.* Belle Vue, Herne Bay
Meade, M.
Loreto Conv., Hulme, Manchester
Ridgway, E.K. *s.d.mu.*
Sunfield H., Wellington
Burtles, M. Girls' Gram. S., Levenshulme
Pullen, M. *h.mu.*
Secondary S. for Girls, Peterborough
Singleton, M. *al.d.*
Loreto Conv., Hulme, Manchester
White, M.C.M. *f.d.* Weymouth P.-T. Centre
Smallpeice, A.P.*d.mu.* Newcastle H., Lewes
Farrell, A. *h.*
Loreto Conv., Hulme, Manchester
Matten, D.F. Weymouth P.-T. Centre
Cartwright, G. *s.f.*
Bestreben High S., Broudesbury
Peeke, H.H. *f.* Private tuition
Newman, E.K. *e.g.do.* Felix H., East Dulwich
Calcutt, E.G. *ch.d.*
Secondary S. for Girls, Peterborough
Parsons, M.M.A. *s.bk.* Holsworthy Middle S.
Price, G.E. *do.* Newcastle H., Lewes
Naylor, S.C. *f.*
Beaurivage S., Weston-s.-Mare
Sharpe, P.M. *s.d.* St. Maur Coll., Chepstow
Martin, I.W. *d.*
Secondary S. for Girls, Peterborough
Sargeant, W.K. *f.ch.*
Portsmouth Girls' Secondary S., Southsea
Sturridge, K. *f.*
Bestreben High S., Broudesbury
Franks, G.B. *s.mu.*
Conway H., Farnborough
Garfoot, B. *ch.*
Secondary S. for Girls, Peterborough
Harker, M. Pengwern Coll., Cheltenham
Stevenson, N.F. *s.* Middle Class S., Stockport

SECOND CLASS [or JUNIOR].

Pass Division.

Jensen, E.M. *f.d.* Westbank S., Dulwich
Mulvey, M.
Loreto Conv., Hulme, Manchester
Nicholson, C. *s.* Grosvenor Coll., Bath
Turner, D. *ch.*
Heaton Pk. Rd. Council S., Newcastle-on-T.
Hooker, D.M. *mu.* Private tuition
Baylis, E. *ge.* Redditch Secondary S.
Lester, G.I. *f.mu.* Sunfield H., Wellington
Brown, G.L. Whitgift H., Croydon
[1]Curtis, M.F. Girls' Gram. S., Levenshulme
Hill, M. Loreto Conv., Hulme, Manchester
Meldrum, R.G. Linwood S., Altrincham
[1]Thomson, K.McC. *s.* Somerville H., Clifton
[1]Wilbraham, E.M.
Brunt's Technical S., Mansfield
Broomhead, H. *al.* Queensberry S., Longton
Brown, O.
Heaton Pk. Rd. Council S., Newcastle-on-T.
Cross, K.G. *mu.* Bourne H., Eastbourne
Wrisberg, L.M.L. *d.* Weymouth P.-T. Centre
Hayes, V.A.M. *mu.* Glenarm Coll., Ilford
McDonald, E.A.
Cambridge House High S., Battersea Park
Stock, S.A.
Clark's College High S., Holloway
Hickson, A.
Loreto Conv., Hulme, Manchester
Newell, E.M. *f.ph.*
Pengwern Coll., Cheltenham
Angell, E.L.G. *d.* Weymouth P.-T. Centre
Coward, E. *s.* Spalding Gram. S.
[1]Lay, A.L. *s.* Private tuition
Lenton, A.M. *ch.*
Secondary S. for Girls, Peterborough
Cox, V.E. Clark's College High S. Holloway
Goodwin, G.I. *bk.* Sirsa H., Cheltenham
Smith, K.E. *d.* Eastrop H., Chichester
Hoather, W.G. *d.* Hounslow P.-T. Centre
Hudson, T.
Loreto Conv., Hulme, Manchester
Kenward, W.N. Newcastle H., Lewes
Collin, L.
Secondary S. for Girls, Peterborough
[1]Grosse, A.M. *g.* Private tuition
Smith, S.G. *f.mu.* Brookville, Filey
Blunsum, O. *s.e.* Woodford High S.
Gibbs, E.M. *d.* Holt H., Fakenham
[1]Haworth, J.
Breck Coll. S., Poulton le Fylde
Hobbs, K.M. *s.* Alexandra Coll., Shirley
Marsland, N.B. *s.f.*
Brook Green Girls' Coll., W.
[1]Waddington, N. *e.* Fylde Coll., Morecambe
Whittaker, O.M. *mu.*
Pencraig Coll., Newport
[1]Mcuntfield, M. Private tuition
Ussher, E.N. *bk.* Wilsford H., Devizes
Warburton, J. *d.* Private tuition
Wright, I.M. *s.* Cranley H., Muswell Hill
Heaps, J. *mu.* Eastrop H., Chichester
Kaye, G.M.
Secondary S. for Girls, Peterborough
Marchant, M. *ch.* Devizes Secondary S.
Robinson, J.M. *do.* Private tuition
Waite, S.C.
Secondary S. for Girls, Peterborough
Wiltshire O.G. St. Hilda's, Herne Bay
Brown, F.M. *mu.* Westbourne H., Cowes
Buxton, M. Queensberry S., Longton
Coulson, E.T. *d.*
Westoe High S. for Girls, South Shields
Coward, C.M. Private tuition
[1]Leather, A. Avenue S., Leigh
Richardson, M.
Loreto Conv., Hulme, Manchester
Woodward, M.D. *s.*
Clark's College High S., Holloway
Auckland, L.
St. Mary's Conv., Middlesbrough
Blacklock, M. *d.*
Loreto Conv., Hulme, Manchester
[1]Colmer, O.M.
Woolston Ladies Coll., Southampton
McGowan, A.
Loreto Conv., Hulme, Manchester
Ballad, F.A. Temple Square S., Aylesbury
Billington, M. Queensberry S., Longton
Faircloth, D.M. *s.* Holt H., Fakenham
Kenny, E.
Loreto Conv., Hulme, Manchester
[1]Leonard, H.M. Abercorn Coll., Dublin
Moss, C.G. *s.a.* Private tuition
Burton, M.C. *f.* Private tuition
Crease, H.M. Larchmount Hall, Yatton
Levrero, M.L. *sp.* Loreto Conv., St. Francis Xavier's, Gibraltar
Stapleton, D. St. Agnes S., Willesden
Baines, G.
Clark's College High S., Holloway
Dickins, K. *mu.* Parnella H., Devizes
Frankling, E.J.M. *s.*
Clark's College High S., Holloway
O'Sullivan, K.
Loreto Conv., Hulme, Manchester
Palmer, D.M.
Secondary S. for Girls, Peterborough
[1]Powell, M.D. *d.* Lulworth House, Caerleon
Rookledge, E.M. Easingwold Gram. S.
Brazil, B. *mu.*
Teddington Coll., Upper Teddington
Edwards, H.L.
Clark's College High S., Holloway
[1]McGrath, S. Avenue S., Leigh
Pitts, E.M.G. *mu.* Westbourne H., Cowes
Elsey, M.M. *ch.*
Secondary S. for Girls, Peterborough
Ivens, S.M. *mu.* Westbourne H., Cowes
Smallpeice, F.Z. Newcastle H., Lewes
Colbourne, K. Alleyne H., Hove
Collins, J.H. *s.d.*
Royal Masonic Inst., Clapham Junction
Ford, K. *d.* Hemdean H., Caversham
Swinburne, L.M.
Elswick Rd. Council S., Newcastle-on-T.
Hammersley, F. Queensberry S., Longton
Sheehan, G.
Loreto Conv., Hulme, Manchester
[1]Hempsall, S.
Brunt's Technical S., Mansfield
Linday, M.G. Cranley H., Muswell Hill
Siddons, H.M. Somerville H., Northampton
Starck, A. *f.* St. James' Ladies' S., Jersey
Daplyn, E.M. Holt H., Fakenham
White, M.J. *s.* Spalding Gram. S.
Hubert, F.L. S. James' Ladies' S., Jersey
Ouzman, F. *s.e.h.* Spalding Gram. S
[1]Perryman, D.M. Alwyne Coll., Canonbury
Spindler, G.M. Private tuition
[1]Thomas, E.E. Private tuition
[1]Cooke, N.E. Private tuition
[1]Draysey, D.L.
Pengwern Coll., Cheltenham
Hanks, G. Beighton House, Sheffield
Burd, M. Loreto Conv., Hulme, Manchester
Evans, M. Private tuition
Glover, M. *s.* Private tuition
Hamblen, L.E. Devizes Secondary S.
Ingram, B.H. *mu.* South Farnboro' High S.
Neaverson, H.M.
Secondary S. for Girls, Peterborough
Rosser, M.E. Preswylfa High S., Cardiff
Eversley, E.H. Private tuition
Hayes, E.A. Spalding Gram. S.
Hutchings, O.E. *e.* Private tuition
Johnceline, E.S. *mu.*
Highfield S., Addiscombe, Croydon
Leese, M. Beighton H., Sheffield
Lemmon, V.
Firth Pk. High S., Pitsmoor, Sheffield
[1]Newman, L. St. Maur Coll., Chepstow
Phang, R.E.A. *s.f.* Grosvenor Coll., Bath
Prime, E.W.M. Weymouth P.-T. Centre
Scott, M. Workington Secondary S.
Braby, D.E. *ch.*
Portsmouth Girls' Secondary S., Southsea
Dodd, W.M. *s.* Hope Lodge S., Bexley Heath
Schuhmacher, D. Wirral S., Heswall
[1]Tribhout, A.A. *f.* Private tuition
Williams, G. *gm.ge.*
Skerry's Coll., Liverpool
Andrews, R.
St. Cuthbert's Coll., Forest Hill
Batty, H. *s.*
Firth Pk. High S., Pitsmoor, Sheffield
Betts, O.M.
Stapleton Hall S., Stroud Green
Johnson, N. Ivy H., Hanwell
Price, C.M. Ladies' Coll., Nantwich
[1]Salisbury, F.A.
Hazelcroft, Weston-s.-Mare
Taylor, M.A.
Secondary S. for Girls, Peterborough
Gaggero, M. *sp.mu.* Loreto Conv., St. Francis Xavier's, Gibraltar
Norris, L. St. Mary's Conv., Middlesbrough
Reeve, H.M. *d.* Private tuition
[1]Spence, A. Private tuition
Toogood, E.M. *s.*
Secondary S. for Girls, Peterborough
Willerton, M.S.
Secondary S. for Girls, Peterborough
Lichtenberg, L.
Stapleton Hall S., Stroud Green
Pesterfield, E.
Secondary S. for Girls, Peterborough
Purchase, E.B. Weymouth P.-T. Centre
Roberts, M.E. Pengwern Coll., Cheltenham
Wilson, K.C.
High Trees Coll., Bournemouth
Hill, N.M. Emwell S., Warminster
Need, A.
Saxonholme High S., Whalley Range
[1]Sissons, E. Brunt's Technical S., Mansfield
Slight, M. Academy, Crewe
Bourne, C.B. *f.l.* Private tuition
Clarke, M.W. *f.* St. Margaret's, Cardiff
Duffield, R.C. Crescent S., Norwich
[1]Graham, G.B.L. Private tuition
Munter, D.E.D. Belle Vue, Herne Bay
Plummer, M.H.
High Trees Coll., Bournemouth
[1]Stacey, D. Private tuition
Sutherland, L. *d.mu.*
Saxonholme High S., Whalley Range
Young, M.
Portsmouth Girls' Secondary S., Southsea
Cabedo, M. *sp.*
Loreto Conv., St. Francis Xavier's, Gibraltar
Cordon, G Queensberry S., Longton
Falkner, M.K. *f.* Radway S., Sidmouth
Jenkin, H.M. *s.* Gram. S., Hayle
Mills, F.E.S. *f.*
Stonyhurst Convent, East Molesey
Swift, E.J.
Secondary S. for Girls, Peterborough
Heasall, D.K. Alexandra Coll., Shirley
Jackson, M.S.
Belgrave Terrace S., Huddersfield
Wright, G.I. Glenarm Coll., Ilford
Armatys, L.E. Beighton H., Sheffield
Gass, E.P.
Elswick Rd. Council S., Newcastle-on-T.
Webb, E. Hounslow P.-T. Centre
[1]Wren, E. Private tuition
Arrowsmith, F. *al.*
St. Mary's Conv., Middlesbrough
Clapshew, A.M. *mu*
Ryde House Comm. S., Ripley
Dallaway, D.E. Private tuition
Holman, H.K.
Stapleton Hall S., Stroud Green
[1]Howes, A. Private tuition
Pocklington, F.
Brunt's Technical S., Mansfield
[1]Tickle, M.L. Private tuition
Phillips, A. St. Maur Coll., Chepstow
Wilbraham, F. *d.*
Brunt's Technical S., Mansfield
Cook, E. Woodford High S.
Hunt, M.D. Blenheim H., Fareham
Knight E.M. Radway S., Sidmouth
Wilkes, J.C.
Portsmouth Girls' Secondary S., Southsea
Cleverdon, I.R. Steyne S., Worthing
Counsell, M.H. Dayfield, Birkdale
Dymond, S.E. Hoe Gram. S., Plymouth
Knyvet-Wilson, A.B. *h f.*
8 Matlock Rd., Thorpe Hamlet, Norwich
Ransford, M.H. Private tuition
Shandel, E. *s.* Somerset H., Ramsgate
Springford, A. Parnella H., Devizes
Morris, H.A.O. Sunfield H., Wellington
Taylor, G.M.
Stapleton Hall S., Stroud Green
Bright, J. Girls' Gram. S., Levenshulme
Duffy, C. Loreto Conv., Hulme, Manchester
Mather, J.U. Rutland High S., Dublin
Millard, M.E. Private tuition
[1]Oxford, G.E.
Grosvenor House High S., Cricklewood
Purdy, H.A.
Elswick Rd. Council S., Newcastle-on-T.
Rochester, R.E. *f.*
Beaurivage S., Weston-s.-Mare
Scott, J.L. Private tuition
Gosling, E. Queensberry S., Longton
Linington, W.M. *bk.*
Thorntonville Girls' S., Thornton Heath
McEwen, E.
Loreto Conv., Hulme, Manchester

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GIRLS, 2ND CLASS, PASS—*Continued.*

Sandall, M.
W. Jesmond Senior S., Newcastle-on-T.
Vickery, D.M. Radway S., Sidmouth
Whiteside, M.M. Fylde Coll., Morecambe

Colclough, D. Queensberry S., Longton
Couchman, C. *f.* Cranley H., Muswell Hill
Douglas, E.A.
Teddington Coll., Upper Teddington
Freeborn, D.I. Dayfield, Birkdale
Wightwick, G.J. WellingtonColl., Hastings

Baker, A.C. Elm H., Ealing
Boulter, L.O. Maindee Lawn S., Newport
Cristol, R. *s.* Somerset H., Ramsgate
Kerry, G.I.
Girls' Coll., Manchester Rd., Southport
Lidbetter, K.M.
Cambridge H., Camden Rd. N.
Potter, M.B. Crescent S., Norwich

Booth, E. Avenue S., Leigh
Chalmers, M.C. Devizes Secondary S.
Giddings, H.A. Devizes Secondary S.
Jackson, D. *s.* Richmond High S., Liscard
Jones, D.E. Brook Green Girls' Coll., W.

Truman, R.A. *s.* Spalding Gram. S.
Yates, E. Queensberry S., Longton

Pantling, D. Whitgift H., Croydon
Corston, H.M. Holt H., Fakenham
Mason, D.E.
Commercial S., High Rd., Wood Green
Pike, D.E. *mu.* Emwell S., Warminster
Thorne, R.M. PearcloseS., HolcombeRogus
Welsh, M. St. Paul's Conv., Kilfinane
Williams, K.M. *f.* Southernhay S., Exeter

Bevan, A.H. Highwood H., Liskeard
Bineham, M. Queensberry S., Longton
Brown, E.
Westoe High S. for Girls, South Shields
Brown, M.E. Private tuition
Harvey, A. Queensberry S., Longton
Kelly, H. St. Mary's Conv., Middlesbrough

Avery, L. Osborne H., Redditch
Harmer, M.I. Hounslow P.-T. Centre
Scott, A.A. Lancelyn H., Kew Gardens
Sherriff, F.E. Highwood H., Liskeard
Simpson, E.E. Spalding Gram. S.

Cleaver, M.H. Durham H., Hove
Davidson, M.E. Private tuition
Kimber, H.M. *bk.* Alexandra Coll., Shirley
King, R.E. Friends' S., Fritchley
Le Roy, E. Clark's College S., Brixton Hill

Langford, A.B.E.A.
Roanoake Coll. S., Palmer's Green
Margetts, W.F.
Somerville H., Northampton

Brown, R.M. The Kingsley S., Shifnal
Harse, D.L.
Central Council Girls' S., Weston-s.-Mare
Levesley, C. Spalding Gram. S.
Smithurst, L.A. West Hill S., Hednesford
[1]White, E. Private tuition

Abbott, E. Leek High S.
[1]Bamlett, E.M. Private tuition
Cooper, A.E. Weymouth P.-T. Centre
Stuart, M. Summerland S., Richmond
Wheeler, N.
Beulah House High S., Upper Tooting

Creasy, R. Breakspear Coll., Brockley
Green, H. Hounslow P.-T. Centre
Ingamells, E.F.
High Trees Coll., Bournemouth
Kerigan, M.F.
Municipal Secondary S., Manchester
McElhone, R.
St. Mary's Conv., Middlesbrough

Barker, W.E.
Licensed Victuallers' Girls' S., Lambeth
Clarke, E. Brunt's Technical S., Mansfield
Day, D. Summerland S., Richmond
[1]Laverick, J. Private tuition
Sims, A.L. Cambourne S., Richmond

Macdonald, F.E. WestbourneH., Chiswick
Robinson, J.I.
Secondary S. for Girls, Peterborough

Eva, K.M. Hounslow P.-T. Centre
North, G. Spalding Gram. S.

Abram, K.M. Elmstone H., Ramsgate
Dobson, E. St. James' Ladies' S., Jersey
Ridge, E.I. The Magnolias, Southsea
Rule, G.G. Grammar S., Hayle
Silvester, G. Blenheim H., Fareham
Slater, M. Fylde Coll., Morecambe

Hogan, W.
Loreto Conv., Hulme, Manchester
Hodgkiss, E. Private tuition
Beetlestone, P.M. The Kingsley S., Shifnal
[1]Colling, E. Argyle H., Sunderland
Whiteside, I.D.
Clark's College High S., Holloway

Barker, I.
Girls' S., The Church Inst., Ilkeston
Bell, E. Canning Street S., Newcastle-on-T.
Emmett, C.
High S., The Green, Twickenham
Jackson, H.
St. Mary's Conv., Middlesbrough
Jones, O.I. S. Margaret's, Cardiff
[1]Thomas, B. Private tuition

Tordeff, L. Dayfield, Birkdale
Venning, M.B. Private tuition

Dootson, N. Private tuition
[1]Minter, W.A. Private tuition
Rayner, N.
Secondary S. for Girls, Peterborough

THIRD CLASS.

Honours Division.

Biggs, C.M. *e.a.al.ms.f.d.*
Crouch End High S., Hornsey
Carboni, P. *a.al.f.sp.mu.* Loreto Conv.,
St. Francis Xavier's, Gibraltar
Clutterbuck, G.M. *al.*
Crouch End High S., Hornsey
Coote, D.A. *e d.mu.* Glenarm Coll., Ilford
Penson, L.M. *h.al.gm.f.*
39 Butler Avenue, Harrow-on-the-Hill
Torres, E. *al.f.sp.d.* Loreto Conv.,
St. Francis Xavier's, Gibraltar
Ussher, M.P. *bk.* Wilsford H., Devizes
Martin, I. *e.h.g.al.f.*
Stoke Public Girls' S., Devonport

Bird, L.K. *e.g.d.*
The Chestnuts, Winscombe
Dobson, D. *f.mu.*
St. James' Ladies' S., Jersey
Parkin, D.B. *s.* St. George's H., Doncaster
Andrews, M. *sp.d.* Loreto Conv.,
St. Francis Xavier's, Gibraltar
Jeram, K.F. *h.a.al.f.* Manor H., Havant
Miles, E.A. *s.d.* Sunfield H., Wellington
Crewe, E. *mu.*
Beech Tree H., Market Drayton
Llewellin, I.M.L. *g.f.* Private tuition
Brown, M.H. *s.d.*
Girls' Gram. S., Levenshulm

Curtis, G.L.
Royal Masonic Inst., Clapham Junction
Izdebski, G.G.D. *e.f.*
Le Coin, St. Ouen's, Jersey
Lavarello, J. *f.sp.* Loreto Conv.,
St. Francis Xavier's, Gibraltar
Bateman, N.M. *h.* Quarry H., Guildford
Coghlan, V.I. *f.* Fulford Field H., York
Poulain, A.M. *f d.* St. Andrew's
R.C. School, St. Heliers, Jersey
White, H.M. *f.*
Queen's S., Cliftonville, Margate
Shores, A.M.T. *s.e.f.d.*
Belle Vue, Herne Bay
Huthwaite, N.I.W. *g.* Private tuition
Baily, W.G. *a.bk.* Alexandra Coll., Shirley
Cannon, J. Queen's S., Cliftonville, Margate
Forbes, D.W.M. *al.* Shenley H., Highgate
Pullan, F.I.
Royal Masonic Inst., Clapham Junction
Turner, E.V.A. *mu.* Beighton H., Sheffield
Bulmer, M.C. *g.*
Royal Masonic Inst., Clapham Junction
Lloyd, L.M. *d.* Westbourne H., Cowes
Sloper, G.M. BeaurivageS., Weston-s.-Mare
Thornely, B.E. Manchester Warehouse-
men & Clerks' Orphan S., Cheadle Hulme
Bevan, E.M. *e.* Oakover Girls' S., Burnham
Brooker, V.A. *e.* OakoverGirls'S., Burnham
Crosby, W.M. *s.* St. George's H., Doncaster
Phang, R.I.M. *f.* Grosvenor Coll., Bath
Pruen, K.E. *a.* Oakover Girls' S., Burnham
Rust, H.M. Cambridge House High S.,
Battersea Park, S.W.
Turner, O.A. *s.g.*
Hope Lodge S., Bexley Heath
Atherton, L.
Royal Masonic Inst., Clapham Junction
Kendall, Muriel S. *a.* HolsworthyMiddleS.
Hewlett, H. *al*
Stoke Public Girls' S., Devonport

THIRD CLASS.

Pass Division.

[2]Thorley, G. *bk.f.*
Loreto Conv., Hulme, Manchester
[2]Bradley, E.A. *s.* Sunfield H., Wellington
[2]Dunlop, E.S.
W. Jesmond Senior S., Newcastle-on-T.
[2]Curtis, M.*s.* Woodford High S.
[2]Izod, W.A. Crouch End High S., Hornsey
[2]Marshall, I.B.
Clark's College High S., Holloway
[2]King, H.E.
Thorntonville Girls' S., Thornton Heath
[2]Luke, V. Abercorn Coll., Dublin
[2]Wells, E.M.
Thorntonville Girls' S., Thornton Heath
[2]Corden, W.J. *mu.* Emwell S., Warminster
[2]Jones, A.B. Technical Day S., Stalybridge
[2]Stoddart, N. *ms.*
W. Jesmond Senior S., Newcastle-on-T
[2]Ridley, M. St. Hilda'sColl., Hexham-on-T.
[2]Bradburn, M.A.
Municipal Secondary S., Manchester
[2]Manning, R. Holsworthy National S.
[2]Buck, N.A. Emwell S., Warminster
[2]Burt, G.N. *s.* Spalding Gram. S.

[2]Crisp, J.
St. David's Coll., Moreton-in-Marsh
[2]Bowen, A.G. Private tuition
[2]Cliff, M.G. Private tuition
[2]Heckford, A.M.
Colne Valley S., Rickmansworth
[2]Dangerfield, G.R.
St. David's Coll., Moreton-in-Marsh
[2]Ransome, D.E. *mu.*
Ryde House Comm. S., Ripley
[2]Smith, I. Wilsford H., Devizes
[2]Price, M.E. Alleyn Coll., Margate
[2]Mary, Y. *f.* NotreDame High S., Plymouth
[2]Woodhouse, W.M. FyldeColl., Morecambe
[2]Cooley, S.E. Spalding Gram. S.
[2]Graham, W.M.
Cornwallis High S., Hastings
[2]Hill, B.M. Clark's College S., Brixton Hill
[2]Greenwood, F.M. Alexandra Coll., Shirley
[2]Mann, R.D. Pengwern Coll., Cheltenham
[2]Norris, V. St. Mary'sConv., Middlesbrough
[2]Ochs, E.M. Fairlight, Croydon
[2]Waugh, S.W. Pencraig Coll., Newport
[2]Clare, G.M. St. Margaret's, Cardiff
[2]Webber, H.V. Felix H., East Dulwich
Bolton, G.M. Woodford High S.
Cabedo, M. *f.sp.* Loreto Conv.,
St. Francis Xavier's, Gibraltar
Leahong, M.F.B. Grosvenor Coll., Bath
[2]Tubb, I.L.
St. Winifred's High S., Southampton
[2]Drew, M.G. Collingwood Coll., Lee
[2]Green, D. *s.* Spalding Gram. S.
[2]Langner, P.M.E. Alleyn Coll., Margate
Speller, H.M.
Royal Masonic Inst., Clapham Junction
Sumner, C.L. Fernside, Grantham

[2]Austin, W.B.
Clark's College S., Brixton Hill
Ellis, W.F. *bk.* St. Winifred's, Torquay
Horwood, D.R. *e.* Hemdean H., Caversham
Smith, W.H. *h.* Harley H., Hereford
Squires, E. *g.f.*
Stoke Public Girls' S., Devonport
Vaughan, M.E. *s.*
Harringay Park High S., Hornsey
Walton, M. *d.* The High S., Stechford
[2]Wright, F.
BrinsleyChurchofEnglandS., Nottingham
[2]Clarkson, M.G. Private tuition
Courlander, K.G.L. *h.*
Cambourne S., Richmond
Frost, C.A. Beighton H., Sheffield
[2]Gibbs, H.M. Private tuition
[2]Hamilton, H.F.R.B.
Workington Secondary S.

Biggs, I.L. *al.*
Crouch End High S., Hornsey
Bradley, E.C. Wilsford H., Devizes
Brown, F.A. The Limes, Buckhurst Hill
[2]Chidlow, S.J. County Secondary S., Hyde
Clifford, D. *e.*
Friedenfels, St. Leonards-on-Sea
[2]Jones, H.M. West Ham High S.
Mountstephen, W.
Stoke Public Girls' S., Devonport
[2]Olsen, L.A.
Central Council Girls' S., Weston-s.-Mare
[2]Yull, L.A. Bleak H., Brentwood

Andrews, J.E. St. Elmo's Coll., Totton
Barter, D.K.
Licensed Victuallers' Girls' S., Lambeth
Burdon, A.M.
Royal Masonic Inst., Clapham Junction
[2]Clancy, S. St. Paul's Conv., Kilfinane
Hodgkinson, W. *d.*
Royal Masonic Inst., Clapham Junction
[2]Michie, E.L. CambridgeH., CamdenRd N.
Nicholson, S.E. Girls' High S., Castleford
[2]Padley, E.M. Fairlight, Croydon
[2]Smith, A.M. Bleak H., Brentwood

[2]Cole, A.L. Park Girls' S., Stratford
[2]Condon, K.A. St. Mary and St. Peter's
S., St. Heliers, Jersey
Gilmour, M.A. *g.d.*
Radley H., Wandsworth Common
[2]Hall, E.M. Ladies' Coll., Nantwich
[2]Holdup, E.M.J.
Secondary S. for Girls, Peterborough
Lawrance, D.
Royal Masonic Inst., Clapham Junction
[2]Mitchiner, D.E. Fairlight, Croydon
Orange, B. Woodford High S.
Smith, R.E. *g.*
Queensthorpe, Cosham, Hants
[2]Stone, L.P. Weymouth P.-T. Centre
[2]Tideswell, N. Seven Thorns S.,
Hr. Openshaw, Manchester

Cameron, E. Westcliff S., Southport
[2]Farwell, D. D'Arcy Hey, Boscombe
[2]Humphrey, H.A.
Girls' High S., London Rd., Maidstone
Matthews, K.H.
Clark's College High S., Holloway
Olden, C.M. St. Elmo's Coll., Totton
Quinton, C.M. Castle Dene, Newport

Dunn, D.O. *f.*
Royal Masonic Inst., Clapham Junction

Hunt, E.M. *g.* The Manse, Buntingford
Nunan, M. St. Paul's Conv., Kilfinane
Priddy, L.L. Oakover Girls S., Burnham
[2]Quinlan, Madge St. Paul's Conv., Kilfinane
[2]Taylor, B.M. Private tuition
Woodhams, M.D'A. Steyne S., Worthing

[2]Buck, O.W. Spalding Gram. S.
Hawson, D. *mu.* Arundel H., Scarborough
[2]Luntley, G. Trinity H., Bexhill-on-Sea
Mayoss, G.A. Alexandra Coll., Shirley
Quinlan, B. St. Paul's Conv., Kilfinane
Roderick, A. *d.* St. Maur Coll., Chepstow
Shearer, J.C. Wellington Coll., Hastings
Soper, D.M. *h.* Girtonville Coll., Aintree
Wallis, K.W. Alexandra Coll., Shirley
[2]White, G.M. Emwell S., Warminster
[2]Woods, E.H.
W. Jesmond Senior S., Newcastle-on-T.

[2]Anzlewood, C.M.
Borough Coll. S., Rotherham
Barton, M. *d.* Castle Dene, Newport
[2]Featherstone E.F.
King's Cliff Endowed S., Wansford
[2]Greenwood, M.A. Private tuition
[2]Haiknev, E.D.
HeatonPk. Rd. CouncilS., Newcastle-on-T.
[2]Maguire, E.F. *f.* Rutland High S., Dublin
Oakes, M. Somerville H., Northampton
[2]Palfreyman, M.M. Spalding Gram. S.
[2]Palmer, I.L. Holly Bank S., Bridgwater
[2]Tunstall, H.E. Bleak H., Brentwood

Biddle, D.M. The High S., Stechford
[2]Dudley, P.W. Brook Green Girls' Coll., W.
Fleck, D.R.
Royal Masonic Inst., Clapham Junction
Gardner, A.M. *f.* Elm Lodge, Petersham
Gillman, D.
Stoke Public Girls' S., Devonport
Keay, H.D. *d.* Girtonville Coll., Aintree
Lang, D. Stoke Public Girls' S., Devonport
Morrell, G.
Stoke Public Girls' S., Devonport
Roberts, E.B. *al.*
Royal Masonic Inst., Clapham Junction
[2]Schumacher, L.
St. Peter's Girls' S., Bournemouth
[2]Tabor, E.C.
St. Cuthbert's Coll., Forest Hill

[2]French, A. Easingwold Gram. S.
Holmes, G.E. *e.* Lonsdale H., Norwich
[2]Hornibrook, E.E.I. Private tuition
[2]Loveday, E. *d.* Thrapston High S. for Girls
North, D.A.
Radley H., Wandsworth Common
[2]Thomas, N. Osborne H., Redditch
[2]Whitehead, E.I.
Licensed Victuallers' Girls' S., Lambeth

[2]Ahier, L. *f.* Private tuition
Bickerstaff, M. Girtonville Coll., Aintree
Clogg, C. *h.* Highwood H., Liskeard
Flint, I.F. *h.d.*
Stapleton Hall S., Stroud Green
Forrest, G.I *g.* Wellington Coll., Hastings
Harrison, D.G.
Crouch End High S., Hornsey
Keeley, E.A. Woodford High S.
[2]Kistruck, E.M. Hemdean H., Caversham
Osbaldiston, M.
Royal Masonic Inst., Clapham Junction
Walter, V.W. *d.* Froebel H., Worthing

Caton, E.K. Roden H., Ongar
Cox, G.F.L. Temple Square S., Aylesbury
Crouch, A.L. RydeHouseComm.S., Ripley
[2]Denyer, F.E.
St. Peter's Girls' S., Bournemouth
Glasspool, V.
Royal Masonic Inst., Clapham Junction
[2]Heslop, A.B. Municipal Evening S. of
Commerce, Manchester
Jarvis, M.J.
St. Peter's Church S., Bayswater
Needham, V. Larchmount Hall, Yatton
[2]O'Donnell, N. St. Paul's Conv., Kilfinane
Simpson, D.M. Headingley Hill S., Leeds
Spender, C.C. Harley H., Hereford
Truby, K.M.
Stapleton Hall S., Stroud Green
Welch, A.H.
W. Jesmond Girls' S., Newcastle-on T.

[2]Ansell, G.W. Alleyn Coll., Margate
Beaumont, H.R. Elsmere S., Reading
[2]Chesters, K. Ladies' Coll., Nantwich
[2]Curtis, E. HighS., The Green, Twickenham
Hannen, M.H.G. *h.* Private tuition
Peacock, K.E. *d.* Holt H., Fakenham
[2]Pope, E.D. 109 Uxbridge Rd., Ealing
[2]Schofield, E. Technical DayS., Stalybridge
[2]Wilkinson, J.
Maryport Church of England S.
[2]Wright, E.H. Fylde Coll., Morecambe

Allchin, F.V.
Royal Masonic Inst., Clapham Junction
Hart, V.C.M. Llanfair H., Kington
Johnson, C.J.
Licensed Victuallers' Girls' S., Lambeth
Maggs, J.V.M. *f.* Private tuition
Martin, E.M. St. Maur Coll., Chepstow
McDougall, O.K. Belle Vue, Herne Bay
Newman, D.E. TempleSquareS., Aylesbury

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GIRLS, 3RD CLASS, PASS.—*Continued.*

O'Reilly, K. *d.* Loreto Conv., St. Francis Xavier's, Gibraltar
²Robinson, L. Eastgate, Stafford
White, D. M. A. *d.* Queen's S., Cliftonville, Margate
Brewer, B. E. Private tuition
Briggs, A. H. Girtonville Coll., Aintree
Dodsworth, M. H. Froebel H., Worthing
Gale, H. *gm.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Hudson, W. Loreto Conv., Hulme, Manchester
²Jenkins, A. M. Summerfield Hall, Maesycwmmer
²Martin, E. Breck Coll. S., Poulton-le-Fylde
²Roberts, A. 29 South Terrace, Cork
Townend, B. M. *d.* Private tuition
Willett, G. 70 Dyke Rd., Brighton
²Williams, E. Private tuition

Brand, D. J. R. Royal Masonic Inst., Clapham Junction
²Browne, E. M. Belle Vue H., Norwich
Carter, E. M. L. Royal Masonic Inst., Clapham Junction
²Cottell, D. M. Private tuition
Doe, L. C. Edgehill Girls' Coll, Bideford
Hawkes, K. J. G. Collingwood Coll., Lee
Heuner, E. N. A. *d.* Carlyle College, Brighton
Moignard, L. A. Royal Masonic Inst., Clapham Junction
Osborn, E. *mu.* Stamford House, Bourne
Parr, D. I. Royal Masonic Inst., Clapham Junction
Proctor, E. *al.* Private tuition
²Shayer, E. J. Central Higher Grade S., Acton

Blyth, F. M. Lonsdale H., Norwich
²Carey, J. St. Paul's Conv., Kilfinane
Cash, E. V. *d.* Derwent H., Margate
Crack, N. *f.* 70 Dyke Rd., Brighton
²Day, G. E. Weymouth P.-T. Centre
Fisher, D. M. Pencraig Coll., Newport
²Ford, D. B. Clark's College High S., Holloway
Gower, E. M. *d.* Boldrewood, Redhill
Le Sauteur, B. M. Vauxhall S., Jersey
Merrett, M. E. Licensed Victuallers' Girls' S., Lambeth
Morris, E. M. *s.* Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Newton, E. M. Royal Masonic Inst., Clapham Junction
Ponting, E. M. *e.* Oakover Girls' S., Burnham
Taylor, C. F. Commercial S., High Rd., Wood Green

Beech, O. A. *al.* Royal Masonic Inst., Clapham Junction
Borrow, W. M. Queensthorpe, Cosham, Hants
Brown, I. K. Westbourne H., Cowes
Grant, A. M. Braunstone H., Newport
²McCall, E. M. Private tuition
Nippin, D. H. Temple Square S., Aylesbury
Pitten, E. G. Lulworth H., Caerleon
Poulton, C. M. Ryde House Comm. S., Ripley
Sumner, M. A. G. *d.* Colne Valley S., Rickmansworth
Taylor, D. M. Wendover Coll., Bowes Park
White, C. H. *e.d.* St. Hilda's Coll., Hexham-on-Tyne
Woodfin, E. E. Sunfield H., Wellington

²Barnes, G. H. Free School Lane Council S., Lincoln
Betts, P. M. Stapleton Hall S., Stroud Green
²Campbell-Everdon, L. E. M. St. Catherine's, Jerningham Rd., New Cross
Collin, M. Girtonville Coll., Aintree
Cupit, M. E. Somerville H., Northampton
Hannah, A. S. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Hanns, H. M. Edgehill Girls' Coll., Bideford
Hudson, E. A. Edersleigh High S., Sheffield
London, D. E. Lulworth H., Caerleon
Pritchard, G. M. Royal Masonic Inst., Clapham Junction
²Renton, A. Bleak H., Brentwood
Tempest, D. M. Headingley Hill S., Leeds
Walton, E. Colville H., Eastbourne
²Whiter, C. M. W. Jesmond Senior S., Newcastle-on-T.
²Woodford, M. Somerville H., Northampton

Bell, M. City of Durham S. for Girls
Bennett, H. M. St. Kilda's Coll., Clifton, Bristol
Bouttell, R. O. Licensed Victuallers' Girls' S., Lambeth
Christian, D. M. High S., The Green, Twickenham
Fausset, L. Royal Masonic Inst., Clapham Junction
Jones, L. A. Brook Green Girls' Coll., W.
Markham, D. M. Glenarm Coll., Ilford
Port, M. Prep. S., Portland Rd., Edgbaston
²Powell, H. G. Cumberland Coll., Acock's Green
Stewart, G. K. *f.* Harley H., Hereford
Udall, I. R. Larchmount Hall, Yatton
²Ussher, T. Loreto Conv., Hulme, Manchester

Bach, G. M. Llanfair H., Kington
Butcher, C. A. E. Bleak H., Brentwood
Johnson, G. Wilsford H., Devizes
Jones, M. S. A. St. Margaret's, Cardiff
Lewis, E. M. St. Maur Coll., Chepstow
²Lewry, H. M. Selhurst Park School, S. Norwood
Millman, V. Stoke Public Girls' S., Devonport
Pape, H. S. Rock Hill, Chulmleigh
Scott, V. R. Brook Green Girls' Coll., W.
Smith, L. L. St. Maur Coll., Chepstow
Taylor, D. Rougemont Coll., Blackpool
Thomas, B. E. The College, Nightingale Lane, Clapham Common
Williams, F. Breakspear Coll., Brockley

Fanshawe, M. Licensed Victuallers' Girls' S., Lambeth
²Guy, I. A. E. The Kingsley S., Shifnal
Kendall, May S. Holsworthy Middle S.
Kewley, L. Aintree High S., Liverpool
²Lynes, J. Firth Park High S., Pitsmoor, Sheffield
Mallet, L. M. *f.* Ashton H., St. Clement's, Jersey
Mounsey, A. M. Breck Coll. S., Poulton-le-Fylde
Rice, H. M. Private tuition
Roberts, A. I. Pengwern Coll., Cheltenham
Smith, M. I. Girtonville Coll., Aintree
Talbot, I. M. Stuart H., Gravesend
West, G. A. Steyne S., Worthing
Williams, I. V. Cambridge H., York
Williams, M. M. *d.* Elsmere S., Reading
Williamson, D. V. Alleyn Coll., Margate

²Ashton, B. M. Avenue S., Leigh
Dryland, W. A. Westbourne H., Cowes
Edwards, V. A. St. Maur Coll., Chepstow
²Harrison, M. W. Ousegate S. Selby
²Hutchins, H. M. Beaconsfield H., Brighton
Kistruck, K. S. Hemdean H., Caversham
Lang, E. V. The Elms, S. Norwood
Musgrave, E. R. French Protestant S., Shaftesbury Avenue, W.C.
Smith, R. M. King's H., Muswell Hill
²Tucker, A. M. Private tuition

Babbage, F. M. United Girls' S., S. Molton
Bruce, D. B. Private tuition
Daniel, L. M. Edgehill Girls' Coll., Bideford
Dunster, R. Stoke Public Girls' S., Devonport
Gardner, E. L. Fylde Coll., Morecambe
Hopkins, H. K. Licensed Victuallers' Girls' S., Lambeth
Mackay, M. I. Royal Masonic Inst., Clapham Junction
Pidsley, E. B. *d.* Bleak H., Brentwood
Pike, I. M. Private tuition
²Stephens, D. Private tuition
²Valpy, I. M. Private tuition

²Beaumont, C. M. A. W. Jesmond Senior S., Newcastle-on-T.
Chesshire, M. Osborne H., Redditch
²Chichester, L. Private tuition
²Coates, V. L. St. Paul's S., Chatham
Dixon, E. M. Penketh School
Evans, K. M. Westbourne H., Chiswick
Hankins, E. M. Thrapston High S. for Girls
²Hart, W. Summerfield Hall., Maesycwmmer
²Hutchins, R. E. St. Hilda's, Herne Bay
Mikesch, C. M. Licensed Victuallers' Girls' S., Lambeth
²Moynihan, L. St. Paul's Conv., Kilfinane
Parker, M. *d.* St. George's H., Doncaster
Payne, D. Royal Masonic Inst., Clapham Junction
Phillimore, M. A. Royal Masonic Inst., Clapham Junction
Pinker, I. M. Froebel H., Worthing
Tonkyn, D. G. Edgehill Girls' Coll., Bideford
Warder, V. M Westbourne H., Cowes
Westmacott, R. P. *f.* Private tuition

Arthur, M. C. *f.* Strathmore H., St. Mary's, Jersey
Brooks, E. L. *do.* Colville H., Eastbourne
Eighteen, F. M. Hemdean H., Caversham
²Freeman, W. A. Collingwood Coll., Lee
Haddon, D. M. Royal Masonic Inst., Clapham Junction
Jackson, I. J. H. High S., The Green, Twickenham
Lindsay, C. Milton Lodge S., Fleetwood
Marsh, D. K. Alexandra Park Coll., Alexandra Park Rd., N.
Thomas, M. I. The Newlands, Bootle
Townshend, E. I. King's H., Muswell Hill

²Clark, K. M. Roanoke Coll. S., Palmer's Green
Cross, W. Kempstow, Malvern Link
²Davies, E. M. Summerfield Hall, Maesycwmmer
Gartside, G. Milton Lodge S., Fleetwood
Harcourt, A. I. E. Fylde Coll., Morecambe
Hickie V. M. 29 South Terrace, Cork
Honeychurch, E. Highwood H., Liskeard
Lynn, P. L. Fernside, Grantham
²Nutsford, A. Maryport Church of England S.
Oxburgh, T. Girtonville Coll., Aintree
Peel, A. E. Pencraig Coll., Newport
Perchard, M. M. *f.* Crown S., St. Martin's, Jersey
Shackell, F. P. Private tuition
Webb, D. G. Clark's College High S., Holloway
²Wild, E. M. Private tuition
Wood, M. A. Merton H., Doncaster

Brummell, E. M. Lyndale H., Midhurst
Fishleigh, A. M. United Girls' S., South Molton
Lowe, C. L. Blenheim H., Fareham
March, M. The Modern S., Torquay
Palmer, E. Stoke Public Girls' S., Devonport
Reynolds, M. Loreto Conv., Hulme, Manchester
Roberts, D. K. The College, Nightingale Lane, Clapham Common
Tee, D. M. *e.* Ladies' Coll., Nantwich

Blackwell, M. C. Castle Dene, Newport
Crooke, D. M. Orton Coll., Coleshill, Birmingham
Eglington, E. R. Sunnyside, Foulsham
Findlay, E. G. Private tuition
Glasspool, E. F. *h.* Froebel H., Worthing
²Hill, A. A. St. Peter's Girls' S., Bournemouth
Kent-Smith, B. W. St. Mary and St. Peter's S., St. Helier's, Jersey
LeQuesne, F. St. James' Ladies' S., Jersey
Quinlan, Mary, St. Paul's Conv., Kilfinane
Spencer, G. M. Whitville Coll., Nottingham
Tillott, E. M. Academy, Crewe
Turnham, I. M. Licensed Victuallers' Girls' S., Lambeth
Walter, D. Froebel H., Worthing
Winstanley, B. W. Girtonville Coll., Aintree

Aucott, M. K. St. Dunstan's Coll., Margate
Bell, K. E. Somerville H., Northampton
²Calver, G. D. Woolston Ladies' Coll., Southampton
²Corbett, J. St. Paul's Conv., Kilfinane
Cullum, D. M. *a.* Thrapston High S. for Girls
Ferguson, F. I. Girtonville Coll., Aintree
Jones, D. G. Abercorn Coll., Dublin
LeFeuvre, F. M. St. Andrew's R.C. School, St. Helier's, Jersey
Varndell, J. R. E. Grosvenor H., Wokingham
Walch, L. G. Avondale Coll., Winchmore Hill
²Wilson, G. E. Gunnersbury High S. for Girls

Constable, W. H. Girls' Blue Coat S., Hereford
Corley, B. F. Stapleton Hall S., Stroud Green
Hicks, I. M. High S., The Green, Twickenham
Hill, D. M. Academy, Crewe
Jenkinson, G. O. Edgehill Girls' Coll., Bideford
Mawson, L. E. M. City of Durham S. for Girls
Molz, K. L. H. Saville H., Muswell Hill
Olley, E. I. Royal Masonic Inst., Clapham Junction

Baker, I. K. Roanoke Coll. S., Palmer's Green
Brand, K. Norma S., Waterloo, Liverpool
Hewett, C. F. Glenarm Coll., Ilford
Hunter, D. Girtonville Coll., Aintree
Lacamp, M. C. E. Haughton S., York
Lawrence, A. D. Hemdean H., Caversham
Poole, E. B. Atcombe H., Barry
Sanders, A. M. Edgehill Girls' Coll., Bideford
Wyatt, M. R. Gunnerside S., Plymouth

Ayres, F. M. United Girls' S., South Molton
Bennett, I. B. Hemdean H., Caversham
²Burden, E. Collingwood Coll., Lee
Clarke, D. Burton H., Weston-s.-Mare
²Duffett, M. 16 Lavant St., Petersfield
Ferguson, A. E. Girtonville Coll., Aintree
Fletcher, M. J. Trinity H., Bexhill-on-Sea
Foot, V. K. Hyde H., Tollington Park, N.
Godin, F. I. Royal Masonic Inst., Clapham Junction
King Farlow, K. Radley H., Wandsworth Common
Ravenscroft, D. Private tuition
Williams, P. M. D. *f.* Clinton H., Nottingham

Baker, A. E. St. Peter's Church S., Bayswater
²Banks, E. M. Whitgift H., Croydon
²Curtis, A. High S., The Green, Twickenham
Francis, M. I. *g.* Collingwood Coll., Lee
Howlett, C. B. 8 Matlock Rd., Thorpe Hamlet, Norwich
Jones, E. C. Licensed Victuallers' Girls' S., Lambeth
Ryan, M. St. Paul's Conv., Kilfinane
Smith, B. M. The Manse, Buntingford
Turner, B. V. Private tuition

Bednall, N. E. A. High S., Syston
²Brush, B. M. Private tuition
Chandler, H. Ellesmere Coll., Cheltenham
Hall, R. A. Roden H., Ongar
Lawrey, M. Alverton S. for Girls, Penzance
²Pohl, F. A. Oxford H., Junction Rd., N.
Smith, M. S. Somerville H., Northampton
²Street, G. M. Girls' High S., Cheadle

Collingwood, B. O. Exmouth Villa, Stoke, Devonport
Gladwell, I. M. Guelph Coll., Redland, Bristol
Grant, G. G. Houndiscombe Coll., Plymouth
Smith, L. H. Ryde H. Comm. S., Ripley

Boodson, F. *f.* Clark's College High S., Holloway
Lee, P. M. Grammar S., Redditch
Taylor, M. Girtonville Coll., Aintree

Barnett, M. Somerset H., Ramsgate
Benjafield, D. M. Edgehill Girls' Coll., Bideford
Dowson, R. A. Barnard Castle S. for Girls
Gordon, D. Clinton H., Nottingham
²Howell, T. M. Preswylfa High S., Cardiff
Kingdon, M. G. United Girls' S., South Molton
LeFeuvre, G. E. Six Roads S., St. Lawrence, Jersey
Morton, G. M. Summerland S., Richmond
Pullinger, L. Ion H., East Molesey
Rose, L. F. St. Kilda's Coll., Clifton, Bristol
Sadler, D. Whitville Coll., Nottingham
Smith, B. M. St. Peter's Church S., Bayswater

Bruckshaw, G. E. Harley H., Hereford
²Chipperfield, E. H. M. Sunnyside, Foulsham
Cohn, E. Harringay Park High S., Hornsey
Fowler, N. G. Pengwern Coll., Cheltenham
Knight, M. M. Camden H., Biggleswade
Lee, B. St. Paul's Conv., Kilfinane
Maddox, H. Girtonville Coll., Aintree
Robson, H. M. Roanoke Coll. S., Palmer's Green
Rosomon, B., Sussex H., Kilburn
Smith, I. M. St. George's H., Doncaster
Sturch, N. M. Guelph Coll., Redland, Bristol
Toyne, E. Crouch End High S., Hornsey

²Bamber, E. Private tuition
Coleman, W. Stoke Public Girls' S., Devonport
Fane, D. E. Ryde House Comm. S., Ripley
Le Quesne, D. St. James' Ladies' S., Jersey
Piper, D. V. H. Froebel H., Worthing
Waters, L. M. Fairhaven High S., nr. Lytham
Wood, A. M. Roall S., Whitley Bridge

Brocklebank, I. Glanavon S., Conway
Drury, M. L. Clark's College High S., Holloway

Dale, M. E. Llanfair H., Kington
Godwin, L. A. Colville H., Swindon
²Stanbury, B. Home Park S., Stoke, Devonport
Taylor, H. Colville H., Swindon

Baudains, L. M. Ashton H., St. Clement's, Jersey
Dogherty, P. H. Richmond High S., Liscard
Goodman, G. I. High S., The Green, Twickenham
Holdstock, D. M. Carisbrook Coll., Walthamstow
Leidig, L. A. St. Catherine's, Jerningham Rd., New Cross
Purser, A. Somerville H., Northampton
Woods, F. L. Temple Square S., Aylesbury

Cowley, A. F. Licensed Victuallers' Girls' S., Lambeth
Grevile, M. Loreto Conv., Hulme, Manchester
Killing, E. E. M. S. Farnboro' High S.
Pryor, H. J. Alverton S. for Girls, Penzance

Burt, E. M. Y.M.C.A. Hall, East Grinstead
Davie, K. St. Kilda's Coll., Clifton, Bristol
Harrop, D. M. Clinton H., Nottingham
McRae, H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Pocock, E. M. Stuart H., Gravesend
Reynolds, G. D. The Limes, Buckhurst Hill

Bernardes, E. Breakspear Coll., Brockley
Bevis, E. J. Oakley High S., Southsea
Blakely, D. A. Llanfair H., Kington
Cocking, A. P. Glendower, Redruth
²Heller, M. L. Private tuition
Maidment, M. Granville S., Southsea

²Baldwin, F. R. Richmond High S., Liscard
Grout, W. M. High S., Hornchurch
Symes, E. A. M. Middle Class S., Gosport

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LOWER FORMS EXAMINATION. — PASS LIST, CHRISTMAS, 1908.

BOYS.

Aberdeen, F.S. Tothill S., Plymouth
Abey, H.W. Argyle House, Sunderland
Abraham, H.R. Handel Coll., Southampton
Acott, A.G. Gravesend Modern S.
Adams, F. Gram. S., Shoreham
Adams, H.P. Commercial Coll., Acton
Allen, C. Handel Coll., Southampton
Allen, R.H. Deerbrook S., W. Norwood
Almond, E. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Alton, J.C. Gram. S., Belper
Amioti, L. South Norwood College
Amos, W.C. Gram. S., Sale
Angelini, H. Harrogate Modern Coll.
Augerer, C. St. Mary's Coll., Harlow
Appleyard, A. Gram. S., Scarborough
Archer, A.W. Balham School
Armour, W. Ryde House Comm. S., Ripley
Armstrong, J.G. Argyle House, Sunderland
Armstrong R. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Arnesen, F. Argyle House, Sunderland
Ash, G.B. Taunton School
Ashford, J.N.E. Tothill S., Plymouth
Askew, C.M. Clifton Coll., Harrogate
Aspinwall, A. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Avery, A.F. Comm. S., Maidstone
Ayre, E. South Molton United Higher S.
Bsal, A.T. West End S., Jersey
Baines, N.T. Steyne School, Worthing
Ball, N. Farnworth Gram. S.
Ballard, E.S. Ryde House Comm. S., Ripley
Bamford, R.S. Gravesend Modern S.
Banwell, R.F. The College, Weston-s.-Mare
Barduck, H.G. Gram. S., Shoreham
Barette, J.J. Oxenford H., St. Lawrence, Jersey
Barlow, E.J.P. Penketh School
Barnes, J.A. Hutton Gram. S.
Barnes, R.M. The Ferns, Thatcham
Barnett, G.B. Maida Vale School, W.
Bartle, E.L. Gravesend Modern S.
Bartlett, R.G.J. Froebel House, Devonport
Barton, J.W. Milton Coll., Bexley Heath
Basden, H.F. Brunswick House, Maidstone
Bateman, S.C. Boys' Coll. S , Aldershot
Bath, S. Newquay College
Batty, D.H. St. Leonards Coll. S.
Batwell, D.A. Private tuition
Beazley J.H.E. Eton H., Southend-on-Sea
Bell, C.A.L. Penketh School
Bellonini, V.L. Richmond Hill School
Bence, C. Highfield S , Chertsey
Benton, F.C. Southport Modern S.
Berry, E. Highfield S., Pendleton
Bessunger, T.N. Grosvenor S., West Hampstead
Biles, G.L. Harleston H., St. Lawrence, Jersey
Bishonden, F. St. John's Coll , Brixton
Blackford, W. South Molton United Higher S
Blackler, W. South Molton United Higher S.
Blake, H.C. Hill Croft S., Mortimer
Blampied, A.J. Jersey Modern S., St. Helier
Blythe, N.H. Evelyn High S., Highgate
Boardman, J.W. St. Aubyn's, Woodford Green
Bolland, D.W. Comm. S., Stratford-on-Avon
Bottomley, J.L. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Boughton, J. Froebel House, Devonport
Boulton, W.G. Comm. S., Stratford-on-Avon
Bowling, C.S. Cliftonville Coll., Margate
Bown, W.L. Taunton School
Bradbury, T.J. Southampton Boys' Coll. and High S.
Bragg, W.A. Cliftonville Coll., Margate
Braine, J.H. Gravesend Modern S.
Bransby, H. Penketh School
Brend, P. Keyford College, Frome
Bridge, J. Gram. S., Blackpool
Brierley, G.R. Carden S., Peckham Rye, S.E.
Briggs, H.E. Bridlington College
Briggs, T.F. Taunton School
Bright, L.J. St. Mary's Coll., Harlow
Broad, F.C. Godwin Coll., Margate
Broad, H.S. Wychwood S., Bournemouth
Brockington, C.C. The School, Wellington Rd., Taunton
Brooks, L.C. Grosvenor S., West Hampstead
Brown, G.E. Grosvenor Coll., Carlisle
Brown, L. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Bryant, A.E.J. Margate Commercial S.
Bryant, H.C. The College, Weston-s.-Mare
Buchan, R.E.V. Steyne School, Worthing
Buck F.A. Emwell S., Warminster
Buckingham, W. South Molton United Higher S.
Buckland, P.W. Gram. S., Clapham
Budds, B.W. Eversley S., Stamford
Buesuel, C.J. Clair-Val S., Gorey, Jersey
Bullough, C. Farnworth Gram. S.
Bunnell, S.A. Gram. S., Shoreham
Burch, G.L. Taunton School
Burchett, J.A.P. St. Aubyn's, Woodford Green
Burghope, G.V.H. Taunton H., Brighton
Burtsal, H.N. St. Aubyn's, Woodford Green
Buttreworth, R.G. Brynhyfryd High S., Newport
Bunting, B.T. Taunton H., Brighton
Burnett, H.H. Ryde House Comm. S., Ripley
Byass, J.H. Ryde House Comm. S., Ripley
Cairns, R. New College, Harrogate
Callander, A. High S. for Boys, Upper Hornsey Rise, N.
Callcott, C.C.L. St. Mary's Coll., Harlow
Cameron, G. Westcliffe S., Southport
Carpenter, E.A. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Carrington, E.N. Taunton School
Carter, G.V.N. Licensed Victuallers' S., Lambeth
Carter, H. Highfield S., Chertsey
Cauker, T.W. Grosvenor Coll., Carlisle
Cavey, V.V. West End S., Jersey
Chadwick, H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Chambers, L.B. Llanfair H., Kington
Chandler, J.F.W. The Ferns, Thatcham
Chappell, G.L. Oxenford H., St. Lawrence, Jersey
Charlton, E.H. Gram. S., Sale
Chinnery, S.F. Licensed Victuallers' S., Lambeth
Clapham, G. New College, Harrogate
Clapham J.S. New College, Harrogate
Clark, J.F. Taunton School
Clarke, D. High S., The Green, Twickenham
Clarke, J.P. The School, Wellington Rd., Taunton
Clarke, R. Cliftonville Coll., Margate
Clarke, S. Penketh School
Clayton, W.R. Bedford H., Folkestone
Clench, L.G. Bradley High S. for Boys, Newton Abbot
Coe, L.H. Ivy H., Hanwell
Coen, M.C. Keyford Coll., Frome
Cohen, S. Victoria Park S., Manchester
Cole, W.M. Gram. S., Streatham
Coles, R.J. Emwell S., Warminster
Colling, C.W. St. Leonards Coll. S.
Comber, R.G. Ryde House Comm. S., Ripley
Combridge, J.T. Taunton H., Brighton
Comyns, W.F.H. Herne Bay College
Cook, R.J. Brunswick H., Maidstone
Coombs, E.W. Taunton School
Cooper, H.F. Balham School
Cornell, R.F.O. Cliftonville Coll., Margate
Cornwell, H.H. Taunton H., Brighton
Cory, E.F.B. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Cowley, J.E.H. Licensed Victuallers' S., Lambeth
Cowlin, S. St. Mary's Coll., Harlow
Craig, G.R. Eversley S., Stamford
Creasy, F.S. Gram. S., Streatham
Croasdale, H. High S., South Shore, Blackpool
Croker, R. Bedford H., Folkestone
Cruickshank, H.D. Handel Coll., Southampton
Dalton, E.J. Commercial Coll., Acton
Dalziel, C.S. Westoe High S., South Shields
Danby, F.G. Gram. S., Scarborough
Darrah, H. Mount Radford S., Exeter
Darrah, N. Mount Radford S., Exeter
Darrington, H.B. Sandwich School
D'Authreau, C.J. Jersey Modern S., St. Helier
Davey, B.C. Oxenford H., St. Lawrence, Jersey
Davies, F.L.S. Swindon High School
Davies, G.E. Taunton School
Davis, F.A. High S., South Shore, Blackpool
Davy, E.R. Penketh School
Dean, M. Bailey S., Durham
de Courcy, C.M. Eversley S., Stamford
De la Haye, N. Jersey Modern S., St. Helier
Denny, A.L. Bedford H , Folkestone
De Wardt, F. Gravesend Modern S.
Dewhurst, G.H. High S., South Shore, Blackpool
Dicks, F.J.N. Douglas S., Cheltenham
Dingley, A.C. Taunton School
Diplock, G.V. Steyne S., Worthing
Dix, H. Highfield S., Chertsey
Docker, C.F.A. St. Aubyn's, Woodford Green
Downing, A. Clifton Coll., Harrogate
Downs, J. Private S., Mechanics Inst., Thornton
Duggleby, W.P. Gram. S., Scarborough
Dunstall, L.W. Gravesend Modern S.
Dyer, E.R. Caversham H., Caversham
Dyson, C.D. Cliftonville Coll., Margate
Eastwood, B.E. The College, Weston-s.-Mare
Eayrs, W.I. Eversley S., Stamford
Eldridge, E.A.D. Grosvenor S., West Hampstead
Elkington, T.A. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Ellett, B. Jersey Modern S., St. Helier
Elsworth, N.E. High S., South Shore, Blackpool
Elworthy, F. South Molton United Higher S.
Emerson, A.E. Taunton School
Etherington, R.B. Ryde House Comm. S., Ripley
Evans, G.E. Boys' Coll. S., Aldershot
Evans, H.J. Grosvenor H., Wokingham
Evans, H.M.E. Ringway Vicarage, Altrincham
Evans, T.R. Mary Street House, Taunton
Eyres, H.T. Charlton Academy, Bath
Fane, R.F. Ryde House Comm. S., Ripley
Ferens, C. Bailey S., Durham
Finch, C.E. Boys' Coll. S., Aldershot
Firkin, R.E. St. Leonards Coll. S.
Fisher, F.W. Farnworth Gram. S.
Fletcher, C.V. Southampton Boys' Coll. and High S.
Fletcher, J.L. Malvern H., Folkestone
Fletcher, L.W. Eton H., Southend-on-Sea
Fleury, W.N.LeB. Windsor Crescent S., St. Helier
Ford, E.W. Emwell S., Warminster
Forster, P.L. Brentwood High S.
Forsyth, M.K. St. John's Coll., Brixton
Fox, G. Grammar S., Belper
Francis, W.R. Taunton School
Franklin, R.B. Handel Coll., Southampton
Fraser, I.K. St. John's Coll., Brixton
Freeman, T. Thrapston High S. for Boys
French, A.L. Ryde House Comm. S., Ripley
Froud, G.A. Brunswick H., Maidstone
Fry, L.H. Maindee Lawn S., Newport
Fuller, H.W. Gravesend Modern S.
Gade, F.S. Harrogate Modern Coll.
Gale, J.H.G. Emwell S., Warminster
Galsworthy, D. Mall Rd. Middle Class S., Hammersmith
Gardner, T.H. St. Mary's Coll., Harlow
Gatfield, R.A. Grammar S., Streatham
Gdanitz, L.A. Boys' Coll. S., Aldershot
Genders, V.S.L. School for the Sons of Officers, Woolwich
Gibson, J.M. Saham Coll , Watton
Gibson, S. Mossley Hall S., Congleton
Gifford, W.R.H. Herne Bay College
Gill, A.E. Ryde House Comm. S., Ripley
Girling, R. Barton School, Wisbech
Glandfield, W.J. Gravesend Modern S.
Gledhill, A.C. Ansdell S., Lytham
Glendening, V.H. Arlington Villa, Brighton
Glyka, A.A. St. John's Coll., Brixton
Godsill, S. Southdown Coll., Eastbourne
Goffin, R.G. Ryde House Comm. S., Ripley
Goodman, S. Taunton School
Goodridge, F. Grammar S., Dawlish
Gosling, E. Gravesend Modern S.
Gould, A.W. Evelyn High S., Highgate
Gradwell, L.J.A. Private tuition
Graham, A.C. Ion H., East Molesey
Gray, T.A. Bedford H., Folkestone
Green, W.A.G. Eversley S., Stamford
Gresty, F.C. Penketh School
Griffin, W.H. Oxford Coll., Waterloo, Liverpool
Griffiths, W.G. Taunton School
Grimley, F. High S., Market Drayton
Grimsditch, H.B. Girtonville Coll., Aintree, Liverpool
Grindey, J.W. Tankerton College
Grist, F.J. Gravesend Modern S
Groves, H.G. Gravesend Modern S.
Gunn, W.H. Froebel H., Devonport
Hall, A.J. Emwell S , Warminster
Hall, R.F. Ryde House Comm. S., Ripley
Hallam, D.B. Gram. S., Belper
Halse, A. South Molton United Higher S.
Hamer, R. Kilgrimol S., St. Annes-on-Sea
Hamilton, C. St. Dominic's, Bognor
Hamling, A G.S. Oxenford H., St. Lawrence, Jersey
Hammond, E.J. Conway H., Farnborough
Hands L. Collett H., Bournemouth
Hands, R.St.J. St. Leonards Coll. S.
Hankins, C. Thrapston High S. for Boys
Harding, C.H. Charlton Academy, Bath
Harding, H.S. Licensed Victuallers' S., Lambeth
Hardwick, E.H. Boys' Coll. S., Aldershot
Hare, P.V. The School, Wellington Rd., Taunton
Harlow E.L. Lynstead, Boscombe
Harriott, A.J. Ryde H. Comm. S., Ripley
Harris, B. Manchester Warehousemen & Clerks' Orphan S , Cheadle Hulme
Harrison, B.A.J. Gram. S., Shoreham
Harrison, G.W. St. John's Coll., Brixton
Hart, E.A. Malvern H., Folkestone
Hart, M.D.R. Maida Vale School, W.
Harter, K.O. Bedford H., Folkestone
Hastings, C. Douglas S., Cheltenham
Hatcher, L. The School, Wellington Rd., Taunton
Haynes, H.S.W. Licensed Victuallers' S., Lambeth
Hayter, S.W. Eton H., Southend-on-Sea
Hayton L. Bailey S., Durham
Hazelby, H.W. Richmond Hill School
Heath, F.E. Boys' Coll. S., Aldershot
Hennessy, R.G. Rostrevor H., Folkestone
Henry, R.A. Gravesend Modern S.
Hersant, W. High S. for Boys, Upper Hornsey Rise, N.
Hicks, A.J. Ryde House Comm. S., Ripley
Hobart, J.F. Commercial Coll., Acton
Hobbs, E. Bedford H., Folkestone
Hodge, L.R. St. Aubyn's, Woodford Green
Hodges, H.S. Southampton Boys' Coll. & High S.
Hogg, H. Bedford H., Folkestone
Hoggett, H.J. Saham Coll., Watton
Holden, W.B. Ryde House Comm. S , Ripley
Hollands, F.M. Brunswick H., Maidstone
Holliday, H.S. Licensed Victuallers' S., Lambeth
Hollinrake, G.S. Lancaster Coll., Morecambe
Holmes, A. South Molton United Higher S.
Hooker, F.P. Brunswick H., Maidstone
Horton, G.P. Brunswick H., Maidstone
Houghton, N.W. Gravesend Modern S.
Howell, F.N. Licensed Victuallers' S., Lambeth
Howells, G.H. Maindee Lawn S., Newport
Huggett, D.D. Douglas S., Cheltenham
Hunt, A. South Molton United Higher S.
Hunt, J. Hutton Gram. S.
Hunter, F.J. St. Leonards Coll. S.
Hunton, S. Bailey S., Durham
Hutchins, C.D.M. The School, Wellington Rd., Taunton
Huxtable, W.H. Newquay College
Iles, H.W. Keyford College, Frome
Irving, W. Victoria Park S., Manchester
Ivens, A.S. Steyne S., Worthing
Ivers, L.T. Farnworth Gram. S.
Ives, J.H.B. Clifton Coll., Harrogate
Jackson, A.C. New College, Harrogate
Jackson, H.S. New College, Harrogate
Jackson, N.H.A. School for the Sons of Officers, Woolwich
Jacobs, I. Argyle H., Sunderland
Jarvis, F.J. Plymstock Boys' S., Plymouth
Jelly, H.R. The College, Weston-super-Mare
Jenk ns, A.H. Gram. S., Streatham
Jennings, W.J. Harleston H., St. Lawrence, Jersey
Jewell, F. Newquay College
Johns, A.B. Taunton School
Johnson, J.E. Private tuition
Johnson, J.P. Licensed Victuallers' S., Lambeth
Johnson, L. Barton S., Wisbech
Johnson, S.H. Lancaster Coll., Morecambe
Johnstone, J.A. Grosvenor Coll., Carlisle
Jolly, W.D. Cliftonville Coll., Margate
Jones, C.B. Girtonville Coll., Aintree, Liverpool
Jones, H.F.G. Taunton School
Jones, W.J. Gram. S., Mutley, Plymouth
Joscelyne, L.A. Mary Street House, Taunton
Jung, E. Highfield S., Chertsey
Keeble, A.T. Private tuition
Keeley, B. Comm. S., Maidstone
Keeley, K. Comm. S., Maidstone
Kelsall, J. Penketh School
Kelsall, T. Blind & Deaf S., Stoke-on-Trent
Kendall, N.B. Cliftonville Coll , Margate
Kendrick, H.B. Grammar S., Sale
Kennedy, H.D. Grammar S., Clapham
Kentish, L. Lancaster Coll , W. Norwood
Key, E.L. Taunton School
Kilmister, R. Douglas S., Cheltenham
King, L. Thrapston High S. for Boys
King, R.O. Winchester H., Bristol
King, S.P. Barton S., Wisbech

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BOYS, LOWER FORMS—*Continued.*

Kingdon, H. South Molton United Higher S.
Kingsbury, J. G. Mary Street House, Taunton
Knapton, N. W. E. Grammar S., Scarborough
Knibbs, A. Hillcroft S., Mortimer
Knight, G. South Molton United Higher S.
Knipe, C. J. Eversley S., Stamford
Knott, E. A. H. New College, Harrogate
Labey, T. F. Clair-Val S., Gorey, Jersey
Lamo, G. H. Clifton Coll., Harrogate
Lambert, A. R. Eton H., Southend-on-Sea
Langler, G. E. Bradley High S., Newton Abbot
Langrish, T. H. Ryde House Comm. S., Ripley
Latham, G. J. Taunton School
Latham, P. H. Farnworth Gram. S.
Latham, R. St. Aubyn's, Woodford Green
Lawrence, C. H. Littleton H., Knowle, Bristol
Leach, A. Godwin Coll., Margate
Leavey, R. W. Hillcroft S., Mortimer
Lee, R. Highfield S., Chertsey
Lee, W. H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Leeds, F. E. Elmstone H., Ramsgate
Lees, H. V. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Le Feuvre, J. B. Harleston H., St. Lawrence, Jersey
Legge, W. J. Froebel H., Devonport
Le Seelleur, G. J. Oxenford H., St. Lawrence, Jersey
Leslie, C. S. Balham School
Lewin, O. S. Godwin Coll., Margate
Lewis, H. G. Penketh School
Lewis, J. F. Penketh School
Ling, W. B. Saham Coll., Watton
Lomas, F. Southampton Boys' Coll. & High S.
Long, C. L. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Lonsdale, V. O. Winchester H., Bristol
Lord, T. N. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Louveau, A. G. Jersey Modern S., St. Helier
Lowe, R. I. Kilgrimol S., St. Annes-on-Sea
Lucas, R. Arundel H., Surbiton
Luce, J. F. Harleston H., St. Lawrence, Jersey
Luce, W. H. Harleston H., St. Lawrence, Jersey
Luscombe, H. P. Richmond Hill School
Luxton, G. South Molton United Higher S.
Lyle, J. A. Milton Coll., Bexley Heath
Lyons, C. Maida Vale School, W.
Mace, W. L. Jersey Modern S., St. Helier
Mackenzie, A. F. Steyne S., Worthing
Mackenzie, R. T. Balham School
Maddock, L. W. Pencraig Coll., Newport
Manley, T. A. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Mann, E. E. Keyford Coll., Frome
Marett, A. F. West End S., Jersey
Marlow, G. S. Ion H., East Molesey
Marrison, C. C. Mannamead S., Plymouth
Martin, J. South Molton United Higher S.
Marton, J. W. Handel Coll., Southampton
Mather, W. S. Kilgrimol S., St. Annes-on-Sea
Matthews, S. Blind & Deaf S., Stoke-on-Trent
Maxted, A. H. Brunswick H., Maidstone
Maxwell, E. A. Lancaster Coll., W. Norwood
Maxwell, G. B. Ansdell S., Lytham
Mayger, H. G. Licensed Victuallers' S., Lambeth
McConnell, W. F. Grammar S., Shoreham
McFear, L. S. Penketh School
McKay, M. Margate Commercial S.
Mead, F. L. Grosvenor H., Wokingham
Medway, C. W. Tothill S., Plymouth
Melbye, C. L. Taunton School
Melling, C. A New College, Harrogate
Mellor, W. Ryde House Comm. S., Ripley
Mercer, T. H. Commercial Coll., Acton
Merigold, B. Hutton Gram. S.
Merrick, N. B. The College, Weston-s.-Mare
Mitchell, G. C. Pencraig Coll., Newport
Mitchell, K. Taunton School
Moody, W. J. Streatham Hill College
Moore, S. W. Brunswick House, Maidstone
Mooring, S. M. Comm. S., Stratford-on-Avon
Morris, C. C. South Norwood College
Morrison, G. C Taunton School
Mortimore, C. Grammar S., Sale
Neighbour, W. H. J Milton Coll., Bexley Heath
Nelson, B. E. St. Mary's Coll., Harlow
Newington, L. G. F. Brunswick H., Maidstone
Newman C. D. Granville Coll., Southampton
Newth, D. C Cliftonville Coll., Margate
Nichol, A. Harrogate Modern Coll.
Nixon, C. H. W. Godwin Coll., Margate
Nixon, R. H. Taunton School
Oldham, F. E. High S. for Boys, Upper Hornsey Rise, N.
Oliver, E. H. Holsworthy Middle S.
Ollington, R. S. Balham School
Pagniez, A. F. St. Mary's Coll., Harlow
Pain, G. R. Collegiate S., Bridgwater
Palfree, J. W. B. Grammar S., Belper
Palmer, F. A. Taunton H., Brighton
Parker, J. F. C. Gram. S., Clapham
Parkin, R. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Parriss, G. V. Comm. S., Stratford-on-Avon
Parsons, E. G. Ryde House Comm. S., Ripley
Patching, A. C. Steyne S., Worthing
Patterson, H. F. Brunswick H., Maidstone
Payne, L. A. Grammar S., Shoreham
Peacock, R. H. Grammar S., Streatham
Pearce, J. A. Godwin Coll., Margate
Pedley, J. H. Mossley Hall S., Congleton
Peeke, H. Taunton School
Pepin, C. LeB. Oxenford H., St. Lawrence, Jersey
Peters, G. Hutton Gram. S.
Phillips, A. R. Taunton School
Phillips, G. R. The College, Weston-s.-Mare
Pickering, C. A. Grammar S., Streatham
Pickering, R. Saham Coll., Watton
Pickering, W. C. Eversley S., Stamford
Picton, A. T. Bailey S., Durham
Pile, J. A. Emwell S., Warminster
Pimlott, J. K. Penketh School
Pinel, A. G. West End S., Jersey
Pinnock, C. Taunton School
Pitcher, S. F. P. Oxenford H., St. Lawrence, Jersey
Pitman, A. R. Brunswick H., Maidstone
Pittis, W. R. Bedford H., Folkestone
Place, A. N. Grammar S., Sale
Plevin, H. W. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Pogson, W. C. New College, Harrogate
Ponder, E. G. Richmond Hill School
Pope, R. A. Handel Coll., Southampton
Porteous, H. R. Richmond Hill School
Potts, R. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Powell, L. South Molton United Higher S.
Powell, W. South Molton United Higher S.
Powers, B. A. Taunton H., Brighton
Pownall, G. H. Steyne S., Worthing
Prentice, H. V. Woolston Coll., Southampton
Price, R. L. The College, Weston-super-Mare
Prior, T. Mossley Hall S., Congleton
Proudfoot, J. Bailey S., Durham
Prunier, P. E. Oxenford H., St. Lawrence, Jersey
Pyle, L. W. Ryde House Comm. S., Ripley
Ramcock, C. W. Grammar S., Shoreham
Randall, G. S. Gordon House, Broadstairs
Ranger, B. S. Cliftonville Coll., Margate
Ransdale, A. C. Grammar S., Shoreham
Ransdale, G. H. Grammar S., Shoreham
Ransome, E. O. Penketh School
Rawnsley, G. Clifton Coll., Harrogate
Reed, E. Highfield S., Chertsey
Rees, D. I. Taunton School
Reeves, B. Brunswick H., Maidstone
Reeves, H. G. Taunton School
Reid, G. F. Southport Modern S
Reycroft, H. V. Boys' Coll. S., Aldershot
Reynolds, G. G. Steyne S., Worthing
Rhodes, F. G. Bedford H., Folkestone
Rich, C. E. Ansdell S., Lytham
Richards, O. W. Handel Coll., Southampton
Rippingille, C. Highfield S., Chertsey
Ritson, G. Argyle H., Sunderland
Rivers, F. South Molton United Higher S.
Rivers, G. South Molton United Higher S.
Roberts, F. W. St. Mary's Coll., Harlow
Roberts, G. T. Arnold H. with Waterloo Coll., Northampton
Roberts, L. E. Commercial Coll., Acton
Roberts, W. A. Farnworth Gram. S.
Robinson, D. R. Milton Coll., Bexley Heath
Robinson, F. A. Gravesend Modern S.
Robinson, J. H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Robinson, W. E. Licensed Victuallers' S., Lambeth
Rodwell, C. H. Cliftonville Coll., Margate
Rogers, C. Margate Commercial S.
Rogerson, S. Penketh School
Romeril, G. H. Harleston H., St. Lawrence, Jersey
Roseby, P. Eversley S., Stamford
Roskell, J. Hutton Gram. S.
Ross, G. Bedford H., Folkestone
Rothwell, V. Farnworth Gram. S.
Rowan, D. F. Grammar S., Belper
Rush, J. Grosvenor Coll., Carlisle
Rushton, G. Southport Modern S.
Salmon, A. R. Bridlington College
Salmon, C. C. Bridlington College
Sandeman, R. F. Arlington Villa, Brighton
Sankey, G. E. Grammar S., Blackpool
Sargent, H. Brentwood High S.
Scarlett, J. B. Mary Street House, Taunton
Schmidt, H. A. New College, Harrogate
Schmitz, C. E. Western Coll., Harrogate
Scott, K. M. Western Coll., Harrogate
Scott, W. K Park H., Broadstairs
Seale, A. Cliftonville Coll., Margate
Searle, A. Collett H., Bournemouth
Settle, L. High S., South Shore, Blackpool
Sharp, E. G. Taunton H., Brighton
Sharps, H. S. Swindon High S.
Sharratt, H. Blind & Deaf S., Stoke-on-Trent
Sheffield, J. Arnold H. with Waterloo Coll., Northampton
Shepherd, A. R. Hillcroft S., Mortimer
Sheppard, G. Taunton School
Shorrock, A. G. Lancaster Coll., Morecambe
Shrewsbury, J. F. D. Farnworth Gram. S.
Side, A. D. Herne Bay College
Slade, A. J. Steyne S., Worthing
Slade, F. G. Southampton Boys' Coll. & High S.
Slade, S. H. Winchester H., Bristol
Slatter, A. Thrapston High S. for Boys
Smethurst, A. K. Ansdell S., Lytham
Smith, A. C. E. Hainault H., Ilford
Smith, D. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Smith, E. D. Godwin Coll., Margate
Smith, E. T. H. St. Leonards Coll. S.
Smith, H. Harrogate Modern Coll.
Smith, H. R. Handel Coll., Southampton
Smith, J. Gravesend Modern S.
Smith, N. R. St. Mary's Coll., Harlow
Smith, N. R. Hutton Gram. S.
Smith, V. C. C. Herne Bay College
Spark, A. J Argyle House, Sunderland
Spradbrow, T. Brunswick H., Maidstone
Spranklin, W. A. St. John's Coll., Brixton
Spurgin, R. E. Blenheim H., Fareham
Stead, G. W. Penketh School
Steedman, E. C. Saham Coll., Watton
Steele, D. J Boys' Coll. S., Aldershot
Steer C. W. Holsworthy Middle S.
Stephens, G. S. Highbury Park S., N.
Stephenson, R. B. Bailey S., Durham
Stevens, G. Highfield S., Chertsey
Stevens, I. H. Handel Coll., Southampton
Stewardson, E. A. Godwin Coll., Margate
Stickney, R. St. Dominic's, Bognor
Stockwell, P. Bridlington College
Stone, S. A. Grammar S., Belper
Stoneham, H. T. Gravesend Modern S
Stott, F. Brunswick H., Maidstone
Stuart, A. E. Westbury H., Southsea
Stuart, C. E. Westbury H., Southsea
Stubbs, R. W. Victoria Park S., Manchester
Sutherland, R. B. Taunton School
Swallow, W. Huddersfield College Modern S.
Sweney, C. H. St. Mary's Coll., Harlow
Swindlehurst, R. Kilgrimol S., St. Annes-on-Sea
Symons, E. J. Eton H., Southend-on-Sea
Tate, F. T. H. Richmond Hill School
Taylor, B. N. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Taylor, F. R. New College, Harrogate
Taylor, H. The College, Weston-super-Mare
Taylor, J. T. South Norwood College
Temple, J. St. Dominic's, Bognor
Thackrah, N. H. Clifton Coll., Harrogate
Theobald, H. E. Taunton School
Thomas, D. H. G. Taunton School
Thomas, F. H. Tutorial S., Penarth
Thompson, A. Penketh School
Thompson, J. A. Western Coll., Harrogate
Thomson, A Oxford Coll., Waterloo, Liverpool
Thorburn, C. J. Bradley High S., Newton Abbot
Thorne, B. South Molton United Higher S.
Thurgood, H. L. St. Mary's Coll., Harlow
Tickle, R. G. Saham Coll., Watton
Tilling, L. R. Westmont, Newport
Tillson, G. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Timberlake, M. Southdown Coll., Eastbourne
Timms, W. R. M. Arnold H. with Waterloo Coll., Northampton
Todd, C. L. Wellswood S., Torquay
Tonde, F. Penketh School
Topping, A. Hutton Gram. S.
Torrance, R. G. Gordon H., Broadstairs
Townsend, C. F. The College, Weston-super-Mare
Tozer, J. R. Bradley High S., Newton Abbot
Tregear, T. R. Colebrook H., Bognor
Tremain, T. Newquay College
Tucker, A. South Molton United Higher S.
Tull, J. W. E. Cliftonville Coll., Margate
Turner, E. Ryde House Comm. S., Ripley
Turner, J. H. Froebel H., Devonport
Turner, T. L. Western Coll., Harrogate
Tweedie, S. Gram., S., Shoreham
Twigg, R. L. Littleton H., Knowle, Bristol
Tyler, S. Brunswick H., Maidstone
Tyler, W. J. Castle Dene S., Newport
Venning E. Bradley High S., Newton Abbot
Vergette, J. Barton S., Wisbech
Wagner, E. Grammar S., Sale
Wainwright, W. T. South Norwood College
Waite, L. Cliftonville Coll., Margate
Wale, W. L. K. Douglas S., Cheltenham
Walker, G. W. Handel Coll., Southampton
Walker, H. E. Brentwood High S.
Walker, W. G. Cliftonville Coll., Margate
Wardle, J. S. Farnworth Gram. S.
Wareham, D. M. Bradley High S., Newton Abbot
Warren, R. L. M. Taunton School
Watchorn, R. A. H. Eversley S., Stamford
Waterton, A. E. Gravesend Modern S.
Watkins, A. B. K. Eton H., Southend-on-Sea
Watkins, E. Steyne S., Worthing
Watson, D. Brentwood High S.
Way, W. A. Westbury H., Southsea
Webb, E. G. Brunswick H., Maidstone
Webb, V. C. E. Taunton School
Wells, C. L. Southdown Coll., Eastbourne
West, A. Collegiate S., Bridgwater
West, E. Bedford H., Folkestone
West, F. A. Grammar S., Shoreham
West, W. Bedford H., Folkestone
Westacott, W. South Molton United Higher S.
Wheaton, R. Taunton School
Wheeler, E. J. Richmond Hill School
Wheeler, L. V. Keyford Coll., Frome
Whincup, W. Western Coll., Harrogate
White, D. T. Ryde H. Comm. S., Ripley
White, G. C. Taunton School
White, N. Blenheim H., Fareham
Whitehead, H. S. Western Coll., Harrogate
Whitehouse, B. Milton Coll., Bexley Heath
Whitelaw, A. D. Clifton Coll., Harrogate
Wigg, H. G. St. Mary's Coll., Harlow
Wilkinson, H. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Willard, S. J. St. Leonards Coll. S.
Willcox, J. T. A. Oxenford H., St. Lawrence, Jersey
Williams, H. S. W. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Williams, N. C. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Williamson, N. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Wills, W. G. Grammar S., Shoreham
Wilson, D. C. Grammar S., Clapham
Wilson, D. N. St. Leonards Coll, S.
Wilson, F. E. Sunny Hill S., Ilfracombe
Wilson, G. C Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Wilson, T. Brunswick House, Maidstone
Witter, H. B. Ansdell S., Lytham
Wood, H. W. Grammar S., Streatham
Wood, J. Hutton Gram. S.
Woodin, R. D. Taunton School
Woodthorpe, A. S. St. Dunstan's Coll., Margate
Woodthorpe, D. F. St. Dunstan's Coll., Margate
Wright, G. H. Jersey Modern S., St. Helier
Wright, M. Lancaster Coll., Morecambe
Yale, J. Westbury H., Southsea
Yates, W. M. L. St. Leonards Coll. S.
Yeaxlee, R. Gravesend Modern S.
Young, H. L. Gram. S., Streatham
Young, W. G. Convent Day S., St. Leonards

GIRLS.

Abel, M. Stoke Public Girls' S., Devonport
Alexander, M. B. Crouch End High S., Hornsey
Alford, D. Stoke Public Girls S., Devonport
Allen, B. Deerbrook S., West Norwood
Allison, M. Cambridge House High S., Battersea Park
Alsop, K. M Warwick House, Roade, Northants
Amery, C. M. Royal Masonic Inst., Clapham Junction
Anderton, A. Park Rd. S., Bingley
Angel, K. Clark's College, High S., Holloway
Angell, I. G. Radley H., Wandsworth Common
Ansell, G. M. Alexandra Coll., Shirley
Anyan, E. M. Fernside, Grantham
Appleton, M. Loreto Conv., Hulme, Manchester
Ashworth, E. Gwelph Coll., Redland, Bristol
Atkinson, A. Girls' Prep. S., High St., Dudley
Austin, G. D'Arcy Hey, Boscombe
Axford, L. E. M. Holsworthy Middle S.
Bailey, G. B. Stanley H., Newport
Bailey, N. Havelock H., Portsmouth
Baird, W. E. Westbourne H., Cowes
Baker, A. C. Alwyne Coll., Canonbury
Baker, E. E. Harley H., Hereford
Baker, E. W. Drayton H., Newport
Baker, G. M. Holsworthy Middle S.
Baker, L. V. Lee Coll., Eastbourne
Baker, O. M. Royal Masonic Inst., Clapham Junction
Balensi, F. Loreto Conv., St Francis Xavier's Gibraltar
Band, M. L. Westoe High S., South Shields
Banyard, D. E. Claughton Coll., Romford
Barber, M. Bleak H., Walsall
Barker, D. G. Cranley H., Muswell Hill
Barker, M. Westcliffe S., Southport
Barnes, E. Cambridge H., Millbrook
Barr, J. O. Azincour H., Deal
Barrett, K. V. Beulah House High S., Upper Tooting
Barrows, G. D. Blenheim H., Fareham
Barthelmeh, L. St. Wilfred's Conv., Chelsea
Barthelmeh, M. St. Wilfred's Conv., Chelsea
Bartholomew, M. H. Royal Bay H., Gorey Village, Jersey
Bartlett, E. Stoke Public Girls' S., Devonport
Bartlett, R. Orton Coll., Coleshill, Birmingham
Bassett, E. W. St. George's H., Doncaster
Bates, N. E. Cambridge H., Camden Rd., N.
Battey, A. St. George's H., Doncaster

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GIRLS, LOWER FORMS—*Continued.*

Beal, D.
Ursuline Conv., Culford Rd., Kingsland
Beasley, G. Crouch End High S., Hornsey
Beckmann, I.G. Hainault H., Ilford
Bedford, E.F. Wintersdorf, Birkdale
Bell, K.M. Crouch End High S., Hornsey
Bellamy, D.L. Girls' Coll. S., Weymouth
Bennett, D. Temple Square S., Aylesbury
Bentall, P.E. Alexandra Coll., Westcliff-on-Sea
Beresford, B. Moseley High S. for Girls
Berthoud, M.
Loreto Conv., Hulme, Manchester
Bessant, G.E. Ryde House Comm. S., Ripley
Biden, K.J.M. Hedingham S., Wallington
Binder, E.D. Hope Lodge S., Bexley Heath
Bishop, E.L. Clare H., Northampton
Blake, C.V. Collegiate S., Brentford
Blay, N.D. Granville Coll., Southampton
Blechschmidt, H.M. Glenarm Coll., Ilford
Booth, G.A. Clark's College High S., Holloway
Borebank, L.R. Somerville H., Northampton
Boulanger, I.B.
St. Clement's Parochial S., Jersey
Bowden, D. Stoke Public Girls' S., Devonport
Bowler, I.J. Fernside, Grantham
Bown, G. St. Agnes S., Willesden
Boyes, M.A. Castle Hall S., Northampton
Bracegirdle, R. Inglewood S., Mobberley
Bradford, P.L. Wintersdorf, Birkdale
Bradley, D. Richmond High S., Liscard
Brewer, E.F.H.
Teddington Coll., Upper Teddington
Brewster, A. Finsbury Park High S., N.
Bridge, D.Y. Brentwood, Southport
Bristow, F.E. Moseley High S. for Girls
Broad, C. 70 Dyke Rd, Brighton
Broad, N. 70 Dyke Rd., Brighton
Brocker, D.M. Olton College for Girls
Bromage, M.M. Llanfair H., Kington
Brookes, O.A.C. Clare H., Northampton
Brown, E.M. Penketh School
Brown, M.C.
Royal Masonic Inst., Clapham Junction
Brown, N.C. East Cliff H., Herne Bay
Browne, A.C.
Cambridge House High S., Battersea Park
Bruford, G.C. Lee Coll., Eastbourne
Brunton, M. Temple Square S., Aylesbury
Bull, H.B. Westbourne H., Cowes
Bullard, H.B.R. Ebenezer H., Norwich
Burdett, E.L. Wendover Coll., Bowes Park
Burdge, A.M. Larchmount Hall, Yatton
Burdge, E.O. Larchmount Hall, Yatton
Burrows, G.
Girls' High S., London Rd., Maidstone
Burton, D.M. Athelstan, Folkestone
Burton, P.M.S. Lee Coll., Eastbourne
Butler, W.E. Castle Hall S., Northampton
Byrne, M.B. Gunnersine S., Plymouth
Campbell, J.M. Cranley H., Muswell Hill
Cane, E.H. Park Coll., Tottenham
Carr, W. St. George's H., Doncaster
Carter, T. Temple Square S., Aylesbury
Catherwood, M.I. High S., Hornchurch
Cattermole, H.M. King's H., Muswell Hill
Chalmers, C. Westoe High S., South Shields
Chamberlain, M.W.
Highfield S., Addiscombe, Croydon
Chapple, E.L.
St. Helen's S., Streatham High Rd., S.W.
Charles, D. Woking High S.
Chinn, E. Girls' High S., Taunton
Chiverton, N. Castle Dene, Newport
Clark, E.G. St. Helen's Coll., Seven Kings
Clark, L.B. Stuart H., Gravesend
Clarke, E. Burton H., Weston-super-Mare
Clouter, A. St. Maur Coll., Chepstow
Coke, D.J. Graysville Girls' S., Leytonstone
Cole, I.C. Radley H., Wandsworth Common
Collett, J.M.
Beulah House High S., Upper Tooting
Collings, W.M. Highwood H., Liskeard
Collis, M.M Edgehill Girls' Coll., Bideford
Colliver, J.E. Alverton S. for Girls, Penzance
Cooke, A.E. Girls' Gram. S., Levenshulme
Cooke, E.A. Graysville Girls' S., Leytonstone
Coombs, O.H. Warwick H., Roade, Northants
Cooper, E.P. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Cooper, H.M. Trinity H., Bexhill-on-Sea
Cornack, K. Glenarm Coll., Ilford
Cory, D. St. James' Ladies' S., Jersey
Cotter, F. Strathnaver, Aughton
Courlander, M.A. Cambourne S., Richmond
Cousins, R.A. Saville H., Muswell Hill
Coveney, E.M. Lancaster Coll., W. Norwood
Cowley, E.M. Froebel H., Worthing
Cox, D.B. North Park S., Albaston
Cox, D.M. Lynton H., Gravesend
Cox, G.E. Westbourne H., Cowes
Cragg, D.L. Milton Lodge S., Fleetwood
Crask, D.E.
St. Michael's Avenue S., Northampton
Crawley, D.G. High Street S., Wroughton
Creives, I.M. Alverton S. for Girls, Penzance
Cresswell, E.M.
School for Girls, Norfolk St., King's Lynn
Crisp, J.I.L. Lee Coll., Eastbourne
Cronk, V.I. Dunmore S., St. Leonards-on-Sea
Crutchett, C.I. Salisbury H., Plymouth
Cubbin, S. Alexandra Coll., Shirley
Cullimore, L.J.
Licensed Victuallers' Girls' S., Lambeth
Daniel, D.I. Private tuition
Davidson, E.W.
St. Helen's S., Streatham High Rd., S.W.
Davies, G.M. Drayton H., Newport
Davis, A.H. Western H., Nottingham
Davis, D.M. Bourne H., Eastbourne
Davis, M.H.
39 Butler Avenue, Harrow-on-the-Hill
Deacon, G. Ysbiod H., Newport
Denness, E.F. Alexandra Coll., Shirley
Dennett, G.A. Alexandra Coll., Shirley
Dennis, E. High S., Hornchurch
de Whalley, C.A.J.
St. Catherine's, Jerningham Rd., New Cross
Dickens, G. Hazelhurst Coll. S., Penarth
Dipple, R. London Coll., Goodmayes
Dixon, A.M. Glenarm Coll., Ilford
Dobbins, D.H. Girls' High S., Taunton
Dobson, E. Beech Tree H., Market Drayton
Doney, M. Stoke Public Girls' S., Devonport
Donston, A. St. Wilfred's Conv., Chelsea
Douglas, M.M.
Southend Coll., Southend-on-Sea
Down, E. Stoke Public Girls' S., Devonport
Drake, W.S. Girls' High S., Castleford
Dunster, E. Stoke Public Girls' S., Devonport
Durbridge, P.R. Grosvenor H., Wokingham
Dutton, W.A. Beech Tree H., Market Drayton
Earley, M. Loreto Conv., Hulme, Manchester
Eastwood, E. Manchester Warehousemen & Clerks' Orphan S, Cheadle Hulme
Eddowes, L.M. Brentwood, Southport
Edwardes, W. Woking High S.
Edwards, I.M. Heathfield, Aintree
Edwards, M.I. Blenheim H., Fareham
Edwards, R.G. Gunnerside School, Plymouth
Ehrhardt, L.M.
Cambridge House High S., Battersea Park
Elliott, M. Woking High S.
Ellis, E. Norma S., Waterloo, Liverpool
Ellis, F.M.E.
St. Helen's S., Streatham High Rd, S.W.
Entwisle, E. Woking High S.
Epps, P.V. Hope Lodge S., Bexley Heath
Evans, G.M. St. Maur Coll., Chepstow
Evans, W.A.
St. Helen's S., Streatham High Rd., S.W.
Ewen, E. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Fairhurst, D. Brentwood, Southport
Farnworth, G. Hartington H, Beckenham
Farrington, M.D. 11 Church St., Oldbury
Faunch, E.A. Hainault H, Ilford
Fear, V.H. High S., The Green, Twickenham
Fearn, M.M.E. Grange S., Ealing
Fenner, M.F. Hartington H., Beckenham
Fielder, V.D. Gwyrfao H., East Cowes
Finch, K.W.P.
Penrith High S., Stoke Newington
Finch, M.F. Westbourne H., Cowes
Fisher, D.E. Castle Hall S., Northampton
Fisher, E.J. Wintersdorf, Birkdale
Fitt, K.
School for Girls, Norfolk St., King's Lynn
Flatt, D.E. Cambridge H., Camden Rd., N.
Flatt, M. Woking High S.
Flindt, M.B. Heathfield, Aintree
Foot, D.M. Girls' Coll. S., Weymouth
Forster, N. Alleyn Coll., Margate
Fowler, K.J. 22 Royal Avenue, Scarboro'
Frearson, D. Girls' Prep. S., High St., Dudley
Freeman, M.A.
Royal Masonic Inst., Clapham Junction
Froggatt, C.M. Hemdean H., Caversham
Frost, H.F. Drayton House, Newport
Fryer, M. Llanfair H., Kington
Fulford, A.C. Edgehill Girls' Coll., Bideford
Fulford, B. Edgehill Girls' Coll., Bideford
Fuller, J.C. Private tuition
Fullilove, C.H.
Southend Coll., Southend-on-Sea
Furber, L. Beech Tree H., Market Drayton
Gaggero, P.
Loreto Conv., St. Francis Xavier's, Gibraltar
Gange, B.L.
Royal Masonic Inst., Clapham Junction
Gargett, E. Stoke Public Girls' S., Devonport
Garrod, V.J.
French Protestant S., Shaftesbury Av., W.C.
Garstin, R.N. Private tuition
Gaskell, E.C. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Geen, M.M. Friedenfels, St. Leonards-on-Sea
Gieve, O.E. Crouch End High S., Hornsey
Gill, I. Houndiscombe Coll., Plymouth
Gill, N. St. George's H., Doncaster
Gilliam, D.M. Hartington H., Beckenham
Gladwell, S.M. Gwelph Coll., Redland, Bristol
Glanville, J.J. Glenarm Coll., Ilford
Godfray, V.M.
Ashton H., St. Clements, Jersey
Goodger, D.M. Hope Lodge S., Bexley Heath
Gottfrey, W. Woking High S.
Goulder, W.M. Greycort, Southport
Gradwell, M.G.A. Private tuition
Green, A.G. Harley H., Hereford
Green, L.D. London Coll., Goodmayes
Gregory, E.R. Warwick H., Roade, Northants
Griffisch, C. London Coll., Goodmayes
Griffith, A. Girls' Gram. S., Levenshulme
Growcott, G.M. 11 Church St., Oldbury
Guest, B.M. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Guthri, V.J. Hedingham S., Wallington
Hadley, G.M.E. 11 Church St., Oldbury
Haggett, D.E. Maindee Lawn S., Newport
Hall, A.G. Camden H., Biggleswade
Hall, D. St. Maur Coll., Chepstow
Hall, M. Park Rd. S., Bingley
Hall, V.E.H. Saville H., Muswell Hill
Halliday, K.O. Westbourne H., Cowes
Hancock, E.M.P.
Crouch End High S., Hornsey
Hanrahan, J. St. Wilfred's Conv., Chelsea
Harding, M.D. Somerville H., Clifton
Harding, R.F.
Licensed Victuallers' Girls S., Lambeth
Hardstaff, M.
Hollygirt, Forest Road, Nottingham
Harper, E.M.H. Crouch End High S., Hornsey
Harris, I.H. Alexandra Coll., Shirley
Harris, M. Ashlea H., Northampton
Haynes, G.G. Edgehill Girls' Coll., Bideford
Hayward, E.M. High S., Hornchurch
Hayward, K. D'Arcy Hey, Boscombe
Hayward, M.M. High S., Hornchurch
Hearn, E. Stoke Public Girls' S., Devonport
Heathcote, V.
Loreto Conv., Hulme, Manchester
Henderson, D. Western H., Nottingham
Henderson, S. Lime Tree H., York
Heseltine, M.
School for Girls, Norfolk St., King's Lynn
Heycock, L.M.
St. Helen's S., Streatham High Rd., S.W.
Hibbs, C. Coll. S. for Girls, Jersey
Hickson, E. Strathnaver, Aughton
Hillman, C. Colville House, Eastbourne
Hilton, E.F.
French Protestant S., Shaftesbury Av., W.C.
Hine, D.K.F. Sunnybrae, Southport
Hitchins, E.M. Summerbrook, Reading
Hobart, M.A. Private tuition
Hocking, E.M. Hemdean H., Caversham
Hodson, V. Bedford Hill Coll., Balham
Holden, A.M. Park Coll., Tottenham
Holland, E. 114 Cathedral Rd., Cardiff
Hollebon, H.D. Bourne H., Eastbourne
Holmes, E. St. Agnes S., Willesden
Holmes, I.N. Collingwood Coll., Lee
Hookway, D.A. Grosvenor Coll., Bath
Hopkins, F.C.M. Beaulieu S., Swanwick
Horner, E.M. Castle Hall S., Northampton
Horwell, G.M. Holsworthy Middle S.
Howard, V.E. Essex H., Saltash
Hudson, F. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Hulme, L. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Hunt, D.A. Summerbrook, Reading
Hurry, G.B. Private tuition
Hutchings, L. Holsworthy Middle S.
Hutchings, M.K.
Cambridge H., Camden Rd., N.
Hyde, M. Girls' Prep. S., High St., Dudley
Inman, H.D.H. Grosvenor Coll., Bath
Inwood, K. Loreto Conv., Hulme, Manchester
Irvin, M. Strathnaver, Aughton
Jackson, K.M.
St. Helen's S., Streatham High Rd., S.W.
James, F.B. Beech Tree H., Market Drayton
James, M. St. Maur Coll, Chepstow
Jameson, E.M. Beech Tree H., Market Drayton
Jeffery, I.J. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Jeffery, O.G. Ashlea H., Northampton
Jennings, H. Private tuition
Jennings, M. Private tuition
Johns, M.M. Bedford Hill Coll., Balham
Johnson, D. Park Rd. S., Bingley
Johnson, E.G. Ivy H., Hanwell
Johnson, K.M. Orton Coll., Coleshill, B'ham
Johnston, C.M.
Teddington Coll., Upper Teddington
Jones, D.V.M.
Clergy Orphan Prep. Girls' S., Gwestfa
Jones, E. Stoke Public Girls' S., Devonport
Jones, J.L. Alexandra Coll., Shirley
Joyce, E.M. Alleyn Coll., Margate
Junk, K. Springfield S., Stockport
Jury, D.V.M. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Keable, E.S.J. The Lodge, Lyddington
Kendall, V.S. Holsworthy Middle S.
Kenhedy, J.E.
39 Butler Avenue, Harrow-on-the-Hill
Kerr, M.M. Alleyn H., Hove
King, C.E. Southend Coll., Southend-on-Sea
King, D.M. Highleigh H., St. John's, S.E.
King, J.N. Porthminster S., St. Ives
King, K.M. Dunmore S., St. Leonards-on-Sea
King Farlow, E.V.
Radley H., Wandsworth Common
Kingston, E.M.
Beech Tree H., Market Drayton
Kitchener, E.A.I. Camden H., Biggleswade
Kite, E. Richmond High S., Liscard
Kivell, G.M. Holsworthy Middle S.
Kivell, M. Holsworthy Middle S.
Knight, V Stoke Public Girls' S., Devonport
Kybert, D.J. Crouch End High S., Hornsey
Ladell, D.A. Alwyne Coll., Canonbury
Laity, E.M. Porthminster S., St. Ives
Lake, D. St. Agnes S., Willesden
Landquist, V.H.
Southend Coll., Southend-on-Sea
Lane, E.E.M. Steyne S., Worthing
Lane, G. Girls' Prep. S., High St., Dudley
Lane, H. Keyford Coll., Frome
Large, H.M. Girls' Prep. S., High St., Dudley
Lark, L. Stoke Public Girls' S., Devonport
Latimer, T. Castle Hall S., Northampton
Lawrence, A.G. Manchester Warehousemen & Clerks' Orphan S., Cheadle Hulme
Lawrence, R.R.N.
St. Michael's Avenue S., Northampton
Lawton, N.B. Wintersdorf, Birkdale
Lea, A. Beech Tree H., Market Drayton
Leach, F. Penketh School
Leahong, C.E.L. Grosvenor Coll., Bath
Leake, R. Graysville Girls' S., Leytonstone
Leake, S. Graysville Girls' S., Leytonstone
Lee, E. Fernside, Grantham
Leeds M.A. Ryde House Comm. S., Ripley
LeGros, E.J. Crown S., St. Martin's, Jersey
LeMay, D. Private tuition
LeSeelleur, E.
Royal Bay H., Gorey Village, Jersey
LeSueur, E.C. Collegiate S. for Girls, Jersey
Lewis, E. St. Maur Coll., Chepstow
Lewis, L.O. Ivy H., Hanwell
Lewis, N.E. Bedford Hill Coll., Balham
Ley, D.M. Guelph H., Cliftonville, Margate
Linaae, C.L. Westoe High S., South Shields
Lingard, M. Springfield S., Stockport
Lloyd, E.A.
Alexandra Park Coll., Alexandra Park Rd., N.
Lodge, M. Marstow, Upper Clapton
Lonnen, A. D'Arcy Hey, Boscombe
Lougher, M. Hazelhurst Coll. S., Penarth
Lythgoe, W.
Loreto Conv., Hulme, Manchester
Macdonald, M.
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The Educational Times.

The Circulation of Teachers.

THE training colleges of the country are at present greatly exercised over the problem of the placing of students who have completed their training. When the administrative changes were going on in 1902 there was an outcry throughout the country that certificated teachers were not to be had. There was a teacher famine. Local Authorities were called upon to do their share in the training of teachers. The existing colleges, it was affirmed, were unable to cope with the situation and would require to be supplemented by new colleges provided by the public Authorities. Several of the Education Committees throughout the country took the matter up; but London took things more seriously than most. She has now seven training colleges doing work in more or less permanent buildings, and is turning out several hundred teachers a year.

For the past two or three years, however, it has been increasingly difficult for the newly fledged teachers to find posts. The difficulty is not confined to London. There is a general complaint from all the training colleges, and the Training College Association and the National Union of Teachers are seriously considering the whole question. The dearth of teachers is certainly past, and the problem is what is to be done with regard to the output of teachers. It would appear that there has been a miscalculation somewhere. At first the complaint was that certain Local Authorities were not doing their duty and were waiting till other Authorities trained teachers in order (by the offer of slightly increased salaries) to entice away those teachers from the district that trained them. But now, though many Authorities have taken no share in providing training colleges, there is already a plethora of trained teachers. The case of the London-trained teachers is regarded as particularly hard, since the students of the London colleges are informed that they must compete with the students from all the provincial colleges for London posts. That is to say, since London is much sought after by teachers as a place to carry on their professional work, there is a keen competition for posts there; and the County Council have, not unreasonably, made up their minds that they are going to employ only the best candidates who come forward, whether they have been trained in London or in the provinces. The result is that a large number of London-trained teachers are unable to obtain posts. These students are unwilling to leave London, and it appears that some of them, rather than go to the provinces, are accepting the salaries of non-certificated teachers under certain of the Committees on the outskirts of London. These Committees, we are told, congratulate themselves on thus profiting by the extremity of the unemployed to obtain certificated teachers below their market value.

It is suggested in certain quarters that the obvious solution is for the County Council of London to train fewer teachers. But the reply of the Council is that they have two duties to perform in this matter. They have, first of all, to take their share in training the number of teachers necessary for the country. But they have also to see that the London boys and girls get their fair chance of entering the teaching profession. From its peculiar circumstances London can depend upon a regular supply of provincially trained teachers. But, if she trains no more than are necessary to supplement the provincial supply, she will make it impossible for London children to have anything like the same chance of becoming teachers as the children in provincial towns possess. The solution of the difficulty would therefore seem to be that there should be a circulation of teachers. If London is the most attractive centre for teachers, it is only right that London should get the best teachers. Of the London-trained teachers there will be a certain proportion able to win posts in competition with the best from the provinces. The remainder must then fare forth to the provinces. Unless the young Londoners have sufficient energy to seek their fortune elsewhere, they must pay the penalty of unemployment. It has to be noted that, though the difficulty occurs in its worst form in London, it is not confined to the capital. In all the great provincial cities young teachers, especially girls, are so unwilling to leave home that they are prepared to accept salaries below their value in the open market.

So far, then, as the circulation of teachers is concerned, there does not seem to be anything seriously wrong, though,

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of course, it is natural that the newly certificated teachers should grumble at having to leave home. But what if they cannot get posts even by going afield? This is much more serious, and indicates that there is something wrong with the national organization for the training of teachers. So far as elementary education is concerned (and now the same will soon hold for the secondary—the money has been already allocated), the training of teachers is not left to the regulation of a natural reaction between supply and demand. The Board of Education interferes in the matter, and must therefore accept the responsibility when anything goes wrong. At the present moment it is not maintained that there are too many teachers, but only that a large number of *certificated* teachers cannot get posts. It is assumed that certificated teachers are better than uncertificated. In the meantime, our schools contain a large number of uncertificated teachers. The time has obviously come when the number of uncertificated teachers in our schools should be reduced. Hitherto the Board of Education might quite well reply that there was no use in making a regulation that a higher proportion of the teachers in the schools should be certificated, since the necessary certificated teachers were not forthcoming. It may be that the Board of Education has only been waiting till there were enough certificated teachers to warrant it in making the required regulation. If so, the time has now come. The change can be made without hardship to any one, as, of course, it would in no way interfere with the present teachers. Our secondary teachers should observe very carefully what action the Board takes in this matter. Their turn will come later.

NOTES.

The appointment of a Royal Commission to inquire into higher education and research in London, actual and desirable, will be warmly welcomed. The University will naturally be the centre of investigation and reference. If it is to fulfil the hopes of those that wish to see it a really great national, or at least metropolitan, institution, and not a loose formal connexion between a congeries of multifarious schools; if it is to exercise due influence upon the schools of advanced education of all classes (general, professional, and technical) outside its direct control; if its various faculties are to challenge comparison with Berlin, Paris, and Harvard; if it is to provide anything like adequate means for even the most urgent departments of research,—then obviously the recommendations of the Commission will be of a startling character. It is significant of much, we take it, that Mr. Haldane has been appointed Chairman: it means, at least, that the inquiry will be comprehensive and thoroughgoing, and that the recommendations will be based on a full recognition of immediate necessities and a generous regard to the probable requirements, and the reasonable possibilities, of the near future. A practical organization and an adequate equipment will demand a very large sum of money; and, as the wealthy people of London have been less touched with the spirit of generosity—not to say duty—that animates so many of the well-to-do citizens of provincial University towns (to say nothing of the amazing liberality that nourishes the Universities of America), evidently a considerable claim will be presented to the Chancellor of the Exchequer. And that claim, we have no doubt, will be frankly admitted: it will be an investment of the highest class. The constitution of the Commission seems open to criticism; one half is as weak as the other half is strong. But probably, in practice, that will make no appreciable difference. The opportunity is great, and it is reassuring to know that Mr. Haldane is in command.

Mr. Benson has contributed a series of three weighty articles to the *Church Family Newspaper*, and, perhaps, the weightiest of the three is the second, in which he considers the education of the average boy. The importance of the matter is that the average boy is the most common kind of boy. Now what are you to do for your average boy? "The urgent necessity," says Mr. Benson, "is the simplification of the curriculum"; "the only chance is to arrive at what may be called an irreducible minimum of subjects," say English, French, Arithmetic, History, Geography, Elementary Science, and Biblical Instruction. "The point would be to get an education which should be really modern and liberal, should open a boy's eyes to the existing conditions of the world, stimulate his intellectual curiosity, and, what is most important of all, really equip him for practical life." We need not follow Mr. Benson's remarks upon the several subjects of his provisional minimum curriculum. There are obvious difficulties—for example, in the teaching of "quite modern history," to say nothing of "simple and straightforward Bible teaching"; but, with sensible teachers, these difficulties ought practically to vanish. No doubt "there should be more variety of types of schools rather than variety of subjects at each school"; but that is certainly—not merely "perhaps"—"looking too far ahead." What is meantime more essential is that the boy should always understand what he is doing. In most subjects the average boy is dragged along with the superior boy, and, being ignorant of his whereabouts, inevitably loses interest, "with the result that such intellectual energy as there is, is dissipated rather than concentrated." There is hardly any average boy that would not take to his work with zest if only he could understand each step in his progress. But the first thing is to conquer "the urgent necessity." "This point is entirely in the hands of head masters." Let them get out of the mist of the ideal and see in the clear light of facts what is necessary for the average boy, and frame measures for the attainment of that end. "It is mainly parental indifference, or, perhaps, parental helplessness, which tends to perpetuate the present unsatisfactory conditions"; but such indifference and helplessness merely demonstrate how easy it would be for the head masters to control a wide-reaching and beneficent reform. Their responsibility is by no means light.

It is about time that some scientific genius were calculating for us the elasticity of a school curriculum. New subjects are pushed forward and old subjects are strenuously defended; but there must be a bursting point somewhere. In the lower ranges, manual training is increasingly making way; and, in the higher, science and modern languages are pressing severely upon the classical subjects. And here is Mr. Town, with the London Chamber of Commerce at his

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back, insisting "that provision be made in the curricula of higher elementary and secondary day schools for a commercial education, and that encouragement be given and adequate grants paid for the teaching of commercial subjects." To be sure, these subjects have their importance; and the London Chamber of Commerce has done yeoman's service since it commenced systematic operations in 1890, though Mr. Town does not overestimate the work done in day, and especially in evening, schools elsewhere. However, he does well to push commercial education on the attention of educationists and of the public. He certainly brings forward a striking array of statistics (which we set out in another column), showing the activity of America, the Continent, and the Far East in developing institutions of commercial training. If the subject has not received the same amount of attention or encouragement in this country, but has been practically left to private effort, one can only say that this is the common history of all subjects, and that the promoters of a new subject must simply push its way to public recognition, as the champions of other subjects have done before them. And this reminds us of Sir Norman Lockyer's lament that education is not taken in hand with the same broad outlook as military organization, and of Mr. A. C. Benson's desideratum of a clear understanding of what it is that we are driving at and of a clear principle of action to get at our essential object.

THE scholarly and suggestive discourse with which Dr. Gilbert Murray read himself into the Regius Chair of Greek at Oxford has been published at the Clarendon Press (1s. net). "The Interpetation of Ancient Greek Literature" is a subject on which he had already earned a very special right to deliver an authoritative opinion. How to ascertain the meaning of the documents that have come down to us from the great Greek writers?

> The palæographer and the grammarian must help us to get the words right. And, when we have got them, their meaning will depend upon all kinds of other questions: the daily lives those men lived, the houses and cities they dwelt in, the historical changes through which they passed—above all, on the beliefs and ideas which they received unconsciously from tradition or built up by the labour of their own brains. The professor of Greek, it is evident, must depend at every turn upon the discoveries or the special knowledge of other workers in the wide field of Hellenic study.

This brief enumeration indicates how immensely the task of understanding has changed since the days of Porson or Elmsley; and Prof. Murray humorously drives home the point by imagining "how greatly out of his depth Elmsley would have felt if he were plunged without preparation into one of our present advanced courses of Greek history." In these days of demand for short cuts to a knowledge of Greek (or other) literature, it is refreshing to hear from a Regius Chair this caution:

> We have need to take great care that, amid the wide additions to our knowledge that come from archæology, history, philosophy, comparative anthropology, and the like, we do not lose our close grip of the minutiæ of the language which formed the great boast of the old English school; still more that, in the reading of learned periodicals and modern books about the Greek writers, we do not forget to read the Greek writers themselves; for, without the foundation of a clean [? clear] and definite understanding of the language and a real knowledge of the books, no superstructure can be sure.

"The letter is the road to the spirit, and it is only through the exactitudes of the letter that the spirit can be made visible."

WHERE is the good of educational experts? The *Times* tells us (February 11) that, though "there has been, and there is, plenty of educational ferment and unrest," yet it is "still mainly a ferment among experts, by which public opinion at large is only slightly affected." "The average Englishman has nothing like the same interest in or knowledge of educational matters as the average German; still less has he the same belief in public education, the same willingness to pay for it, as the average American." He remains a Philistine. Undoubtedly, "the lack of an instructed and really interested public opinion has very much hampered—and will, it may be feared, still hamper—the course of public education in England." "Could the great public schools," says the *Times*, "be convicted of far worse educational inefficiency than can be laid to their charge, not one parent in a hundred who hopes to send his son to any of them would withdraw his boy's name." "The general public," says the *Times*, "seems satisfied with the Universities as they are, and feels no interest in remodelling them." Well, well; "reform will, no doubt, in time touch both secondary schools and Universities." But, meantime, some one may be prompted to ask whether the *Times* is not a somewhat prominent instructor of this obdurate and self-satisfied public, and whether, instead of a Laodicean and rather cynical survey and chronicle of the facts, it might not be expected to do something to stir up this "lukewarm and silent" public opinion? Let the *Times* take the experts by the hand and expound to the public the importance of their deliverances. If the experts have prevailed in Germany and in America, they will probably prevail here—"in time." But that time might be indefinitely shortened if the experts were properly backed up by the journals that influence public opinion. Moreover, if the public is so quiescent, there is a grand opportunity for a discerning and enterprising press—and for an enlightened and courageous Government.

ANTHROPOLOGICALLY, we believe, Glasgow is markedly at variance with the general characteristics of the rest of Scotland. Whether this scientific fact has any bearing upon the remarkable results of the recent examination in English for entrance to the University we will not undertake to decide. "Out of 227 candidates who entered for English, only 28 passed, showing a percentage of passes of 12·33, while the percentages in the other Universities were—St. Andrews 43·75, Aberdeen 29·85, Edinburgh 48·25, or an average pass for these three Universities of 40·62, upon the same papers." The Edinburgh district has an historical affinity with England; St. Andrews' golf links are much frequented by Southrons; and Aberdeen has the reputation of granitic hard-headedness: but such explanations may still be inadequate. In any case, the Glasgow University Court is much aggrieved. A Committee appointed to communicate with the Joint Board on the subject got no satisfactory reply to their request for a scrutiny of the papers, and "could only reiterate their dissatisfaction with the decision of the Joint Board." Dr. M'Vail, however, infused courage into the Court in a fighting speech, in which he pointed out that, according to the ordinance in that behalf, the examination papers should not have been set by the Joint Board at all, but by the examiners in

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the University; and at last he brought the members to assent unanimously to a motion "that the whole question be remitted back to the Committee to consider the whole procedure, to ascertain how far the ordinance had been complied with, and to endeavour to get the examination papers from the Board." In due course, the Glasgow papers will return to the custody of the convener of the Joint Board, who happens also to be the Secretary of the University Court; and then another interesting situation will arise, for, as Principal Macalister said, "the Secretary of this Court cannot coerce the convener of the Joint Board." If the Secretary-Convener do not succeed in coercing himself, who shall coerce him? The tangle is a beautiful tangle as it stands, and it would be a pity to spoil it. But 12·33 per cent. is not easy to bear. Pity the faithful examiner!

SUMMARY OF THE MONTH.

THE King has been pleased to appoint a Royal Commission on University Education in London. The terms of the reference are:

To inquire into the working of the present organization of the University of London and into other facilities for advanced education (general, professional, and technical) existing in London for persons of either sex above secondary-school age.

To consider what provision should exist in the Metropolis for University teaching and research.

To make recommendations as to the relations which should in consequence subsist between the University of London, its incorporated colleges, the Imperial College of Science and Technology, the other schools of the University, and the various public institutions and bodies concerned.

To recommend as to any changes of constitution and organization which appear desirable.

In considering these matters, regard should also be had to the facilities for education and research which the Metropolis should afford for specialist and advanced students in connexion with the provision existing in other parts of the United Kingdom and of his Majesty's Dominions beyond the seas.

The Chairman of the Commission is Mr. R. B. Haldane, K.C., M.P., and the members are: Viscount Milner, G.C.B., G.C.M.G., Sir Robert Romer, G.C.B., Sir R. L. Morant, K.C.B., Mr. Laurence Currie, M.A., Mr. W. S. M'Cormick, M.A., LL.D., Mr. E. B. Sargant, M.A., and Mrs. Creighton. The joint secretaries to the Commission are Mr. J. Kemp and Mr. H. F. Heath.

THE third annual dinner of the University of London Graduates' Association was held (February 11) at the Waldorf Hotel. Mr. Justice Walton, the President, was in the chair. Dr. Russell Wells proposed the toast of "The University." He said that it was not an institution that arose in 1900 with the findings of a Royal Commission. It had an ancient and honourable history. When the University was reconstituted it was predicted by some that its old work would come to a standstill, that the old open portals of the University would be closed. He for one thought that, if that had been the result, it would have been little short of a disaster, but in actual practice he was happy to say that that prediction had not been fulfilled. Last year they had more graduates on the external side than there were graduates in the University in the last year before the reconstitution. In addition they had a large number of internal graduates. The association did not make a distinction between the two sets of graduates. On the whole, he thought the University was steadily going forward and would take a larger part in the educational equipment of this country. They were, however, shortly going through the throes of a Royal Commission. He believed that the findings of that Royal Commission would be such as would increase their powers and responsibilities. He saw growing up in London a great centre of learning—a University which would be an Imperial University. He saw London becoming the seat and the centre of one of the greatest institutions of learning in Europe. He believed that they had the power of making the University of London the greatest institution that the world had ever seen. But, in order to do that, they needed the devotion of every one of its members, and, above all, they wanted money. Sir Philip Magnus, M.P., who responded, said that the London University was the first University in this country to give encouragement to the teaching of science. He believed that whoever had to write the history of education during the latter half of the last century would undoubtedly say that the prominence which had been given to science teaching in our secondary schools and in our Universities was the great feature of that history. The Faculty of Engineering was destined to become one of the most important faculties of the whole University. The Imperial College of Science and Technology should not grow up as a rival to the University. They felt that, if that institution was to be located, as it was located, in the metropolis, it must not be a rival, but must form an integral part of the University.

THE Annual General Meeting of the Association of Technical Institutions was held at Grocers' Hall on February 5 and 6. The business meeting on the first day was preceded by a luncheon at which members of the Association were entertained by the Grocers' Company. In proposing the toast of "The Association of Technical Institutions," Sir William White said he does not believe in the truth of the statements as to the decadence of England; but he is sure that, if we are to keep the position we hold, we must, as a nation, lose no opportunity of developing the technical institutions of the country. Sir Norman Lockyer responded, and during the course of his remarks said, if Mr. Haldane had gone to the Education Office instead of the War Office, we should have had a Board of Education responsible for all education from top to bottom instead of the truncated body we have at present. There would be a general staff, full of knowledge, directing everything, so that in a few years' time, by this organization and the administrative conditions it brought about, we should have such a peace army as Mr. Haldane is endeavouring to give in the shape of a war army. At the subsequent meeting, Dr. George T. Beilby, F.R.S., was elected President for 1909, and proceeded to deliver his address. If, he said, the members of the Association are possessed by the belief that the industrial future of the nation must largely depend on the spread of education in science and in the application of its laws to the affairs of daily life, then they cannot escape from the conclusion that it is their particular duty to see to it that they are taking a leading part in this vitally important work. If, he pointed out, the training in technical institutions is to be modelled on the lines of the best professional standards, it is necessary to secure the active co-operation of representative men from those industries for which it is proposed to train the students. With the help of such representatives, courses of instruction, practical as well as theoretical, must be organized. The same kind of reality must be given to the practical side of the work as is found in the clinical teaching of medical students, and it must be made compulsory for all who desire to obtain the full diploma of the college. On the second day, Principal F. C. Forth, of Belfast, read a paper on the management of the entrance examinations giving admission to the evening classes of a technical institute, and Mr. Sidney Webb opened a discussion on compulsory attendance at evening classes.

AT the distribution of prizes and certificates at the Newry Technical Institution, Mr. C. E. Town, Deputy-assistant Secretary for Commercial Education of the London Chamber of Commerce, delivered an interesting address on the growth of commercial education. It had always (he said) been a matter of great surprise to him that the Technical and Commercial Education Act had been so unequally administered. While technical education had received the utmost consideration and support, commercial education had been left more or less to look after itself. When one considered the commercial progress which, during the last twenty years, had been made by America, Germany, France, Austria, Belgium, and many of the less important countries of Europe, and at the same time made a careful study of their education systems, it was at once seen that such progress was coincidental with the special attention they had given to commercial education. In New York State alone there were no less than 500 business training colleges, many of which were established fifty years ago, while throughout the whole of the United States of America there were a very large number of similar institutions. In Germany some twelve years ago there were 112 commercial schools, but now there were upwards of 430. Germany was also paying special attention to the commercial education of women: in 1892 there were three schools established for women, and now there were over eighty. The

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Germans were giving special attention to the teaching of commercial subjects, and had formulated a system so complete that there were no less than five distinct grades of commercial schools established throughout the German Empire. In Japan commercial education had for some years received special attention, and at Tokyo there was a higher commercial school, with upwards of 500 students in daily attendance. This school was maintained by the Japanese Government and cost, for site and building, no less than £28,000. Here students could obtain a complete course of commercial training at a cost of about £2. 10s. per annum, for which sum they received about thirty-two hours' instruction weekly. A significant fact in the curriculum of this and other commercial schools in Japan was that English was a compulsory language.

Turning to home, Mr. Town said they did not find, after eighteen years of strenuous work, that commercial education was receiving the same amount of attention or encouragement as in other countries. It had practically been left to private effort, and in this the London Chamber of Commerce, as the pioneers, and others Chambers of Commerce throughout the Empire had rendered a great and valuable service to commerce. Of recent years the Board of Education for England and Wales had incorporated the teaching of commercial subjects, for which they paid small grants, in the regulations for technical schools, schools of art and other schools and classes (both day and evening) for further education, but did not conduct examinations in commercial subjects or issue certificates of proficiency to those so trained. It was in this respect that the scheme of commercial education examinations of the London Chamber of Commerce met an educational and a commercial demand. When the London Chamber of Commerce commenced its work in 1890 little or no commercial teaching was given, except in a few proprietary schools, which, amongst other subjects, gave instruction of a very inferior quality in handwriting, shorthand, typewriting, book-keeping, with either French or German. To-day, as far as evening work was concerned, there were throughout the Empire greater facilities now than formerly for the teaching of commercial subjects suited to the requirements of all positions in commercial houses, no matter whether it be as a junior or senior, or correspondence clerks, cashiers, book-keepers, accountants, representatives, managers, secretaries, or principals. What was needed, however, was that provision be made in the curricula of higher elementary and secondary day schools for a commercial education, and that encouragement be given and adequate grants paid for the teaching of commercial subjects. When the Board of Education incorporated in its regulations for higher elementary and secondary day schools commercial courses as alternatives to courses in science and art, there would be little need to fear what our friends on the Continent or on the other side of the Atlantic might be doing in this direction. Once the public had become convinced of the necessity and value of commercial education and facilities were provided for acquiring it, we should soon make up much of the leeway of the past.

To commemorate the centenary of the birth of Charles Darwin Prof. Vines, Prof. Poulton, and Prof. Bourne gave an "At Home" (February 12) to the University in the Examination Schools, Oxford. There was a large and distinguished gathering, including many heads of houses and four of Charles Darwin's sons—Mr. William Darwin, Prof. Sir George Darwin, F.R.S., Mr. Francis Darwin, and Major Leonard Darwin (President of the Royal Geographical Society). Prof. Poulton delivered an address on "Fifty Years of Darwinism," in the course of which he said the enthusiasm inspired by science in large part depended on the onward rush into the unknown. The call of the future was so imperative that there was little temptation to listen to the past. Yet there were occasions when the scientific man would gain most inspiration and guidance and hope by pausing and looking back. And, if ever this was true, it was true to-day on the hundredth anniversary of the birth of Charles Darwin. Looking back on the controversy which immediately followed the publication of "The Origin of Species," the contrast between the maturity of the new views and the crudity of the attacks which were directed against them was remarkable in the history of science. On the one side were the twenty years of reflection and investigation by the greatest of naturalists; on the other, the impressions of those who received the new views for the first time and very imperfectly understood them. Comparing the effects produced upon thought by our two greatest scientific men (Newton and Darwin), Prof. Poulton observed that the world of 1686 which received the "Principia" was a very different world from that to which, in 1859, was given "The Origin of Species." Newton's sublime discoveries were for the students of physical science and mathematics, and were slow in penetrating even these. It was far otherwise with the teachings of "The Origin." Every new creative thought which cut deep into "the general heart of humankind" must bring, when it came, division and pain—not peace, but a sword. And now that the battle of evolution had long been over, the dominant feeling, as they looked back upon the past half-century, was of pathos even more than of triumph. In all the boundless realm of philosophy and science there was no thought which had carried with it so much of pain, but in the end not long delayed, so much of the joy which came of intellectual activity and effort, as the doctrine of organic evolution, which must always be associated, first and foremost, with the name of Charles Darwin. Sir George Darwin and Mr. Francis Darwin also briefly addressed the gathering.

The distribution of prizes awarded by the National Society of French Masters in the twenty-fourth competition among English colleges and schools took place (February 6) at the Mansion House. The French Ambassador said he was happy to have a new opportunity of thanking the Lord Mayor and Lady Mayoress for the hospitality and kindness which had always been manifested towards the Society of French Masters by the representatives of the City of London. Since 1899, when he first attended a distribution of the prizes gained in the competitions in the French language in London, the number of examinees of both sexes had increased in truly extraordinary proportions. In 1899 the number of competitors was 240. In 1903 the number rose to 2,400, and this was attributable to the fact that the King of England then paid his first official visit to Paris, and that the President of the French Republic, M. Loubet, made an official visit to London. From the day that cordial relations were established between the two Governments, the understanding between the two peoples became more and more intimate, and the youth of the two nations became interested, so that the study of French was taken up with enthusiasm by the English schools and the study of English assumed very large proportions in France. He trusted that that would continue, and that the love for his country's language and literature would find an echo in the minds of the youth of France. It was good that they should think the same in France as the people in England, because the two countries were the most powerful factors to spread throughout the world the interests of peace, of civilization, and of liberty. M. Albert Barrère presented the report of the committee on the competitions of 1908. The level of French teaching and study did not, he said, seem to have declined, and the taste for the French writers was apparently on the increase. The total number of candidates at the examinations was 4,950, or 548 more than in 1907.

At the annual meeting of the Mathematical Association, the retiring President (Prof. Bryan) expressed doubt as to whether the members fully realized the serious danger that was imminent at the present time—namely, the extinction of the English mathematical specialist. They were told that mathematicians must take off their coats and work. He would say that English mathematicians must take off their coats and fight for their lives. At present no one in England had a good word to say for the mathematical specialist, though in other countries he was exercising an ever growing influence on the destinies of the nation The nation that tried to do without the mathematical specialist was like the foundry where they tried to drive rivets into boiler plates with a pair of nut-crackers. He believed that the hard things which were said about mathematicians in England were due to the fact that people in general could not distinguish—it was impossible that they should distinguish—between a Wrangler and a mathematician. By a Wrangler he meant not only a Cambridge Wrangler, but any man who underwent a rigid course of mental training to enable him to pass a difficult examination in mathematics. He maintained that the most successful teacher required his ideas to be enlarged in some direction beyond the syllabus of the typical B.Sc.'s examination if he was not to run in blinkers all his life. If that were done, they would train up a body of teachers each of whom was a specialist in his own little little way. The want of practical elementary experience in calculating and measuring was everywhere apparent. The mathematician of the future, if he was to save himself from destruction, must be a fighting man, and must convince the British public that he was a power in the country, that he wished to use his

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power for the benefit of the country, and that the country could not get on without him.

The Friends' Guild of Teachers held its fourteenth annual meeting at Tunbridge Wells, January 4 to 6. The President (Lucy F. Morland) discussed some problems of elementary education from the administrative standpoint. Francis E. Pollard, speaking on "Educational Peace Work," desiderated a positive policy instead of the merely negative one of objecting to military drill and the like in schools: the real object was to lead on to a broad conception of life as the service of humanity. A discussion of reports upon the International Moral Education Congress did not reach a definite point through lack of time. Prof. Findlay spoke on co-operation between school and home; and there was a very interesting discussion on the scope of art teaching in schools. The attendance, though considerable, was comparatively small, "but want of numbers seemed more than counterbalanced by the vigour and efficiency of the few."

The total number of candidates entered for the Cambridge Local Examinations held in December last was 12,548, exclusive of 2,831 candidates examined at Colonial centres. In the Senior Examination 1,009 boys and 1,195 girls passed, 82 boys and 14 girls being placed in the First Class. Sufficient merit was shown by 545 boys and 220 girls to entitle them to exemption from one or both parts of the Previous Examination. Of the junior candidates, 2,234 boys and 1,785 girls passed, the number placed in the First Class being 194 and 24 respectively. In the Preliminary Examination 1,476 boys and 1,033 girls satisfied the examiners. The awards of scholarships and prizes, the examiners' reports, the tables showing the success or failure of the individual candidates in each section, and the class lists for the Colonial centres will be published during the current month.

The Oxford delegates for the training of secondary teachers express in their report the hope that "the conditions, both financial and general, of the delegacy's work are about to be greatly improved by the recent intervention of the Board of Education, which announced at the end of July that it was prepared to consider an application from the delegacy for recognition and grant under the new regulations for the training of teachers for secondary schools, 1908." Under present conditions the work of the delegacy is carried on at an annual loss of over £200. The number of students reading for the diploma increased from seventy-one (thirty-one men and forty women) in 1907 to eighty (forty-two men and thirty-eight women) in 1908.

The Carnegie Trustees are also concerned about the new regulations for the preliminary education, training, and certification of teachers. They consider that the funds of the Trust are not chargeable with providing the students in training any part of the instruction required for a general certificate in terms of the regulations for the preliminary education, training, and certification of teachers whether the Provincial Committees arrange for the supply of such instruction in University classes or in classes instituted by themselves. They hold that that is properly a charge upon the grants voted by Government for the purpose. The trustees continue to insist so far as possible that all students, on whose behalf University class fees are paid by the Trust, shall have ample time and opportunity to devote themselves to the work of those classes, and in the case of students under training, the trustees would not feel justified in assisting them, for instance, to attempt to compress into three years both the special instruction intended to fit them for their professional career and the wider studies required for a complete degree curriculum.

In the new Arts ordinance passed for the Universities of Glasgow, Aberdeen, and Edinburgh, and in that under preparation by the University of St. Andrews, regulations have been or may be framed removing the necessity of attendance on qualifying classes in Latin (or Greek) and mathematics (or natural philosophy), and this change has or will have the incidental effect of lowering the minimum University requirements as to the Preliminary or Entrance Examination for a full curriculum in Arts unless it be guarded against by further ordinance or regulation. In these circumstances the executive committee of the Carnegie Trust desire to know whether it would be possible for students who had entered the University for the first time at the beginning of the current session, and who had passed the Arts Preliminary Examination without a pass in higher Latin or intermediate mathematics, as the case might be, to graduate in Arts without any further examination. At the beginning of the current session the committee received many applications from such students, more especially in the University of Edinburgh, where curricula under the new ordinance had already been approved, and in consideration of the wording of the regulation of the Trust as it then stood they had no alternative but to offer those students a conditional promise. Though the committee hoped, if necessary, to be able to meet this unforeseen call upon the funds of the Trust, they did not see their way to be satisfied in the future with a lower requirement of preliminary education than had hitherto been demanded. On the other hand, they were not desirous of insisting on a higher preliminary standard in the particular subjects of Latin or mathematics than the Universities might see fit to require. They proposed to alter their regulation thus:—"Applicants qualified in the two previous regulations will be eligible for payment of University class fees if they have obtained the leaving certificate of the Scotch Education Department, bearing evidence of such preliminary education as is required by the Universities for entrance upon their respective graduating curricula. Applicants who have not obtained the aforesaid leaving certificate may be considered eligible upon production of evidence of a preliminary education of equivalent standard." The committee believe, apart from the immediate circumstances of the case, that that regulation would, among other advantages, tend to a closer co-ordination of the Universities and the secondary schools of Scotland, from which almost all the beneficiaries of the Trust were drawn.

It is in the highest degree desirable (says the *Statist*) that the Catholic youth of Ireland should find in the new National University a congenial and a sound system of education, and therefore that the whole Catholic community should, as soon as may be, be leavened by the enlightened minority. There is, however, a higher and a more important argument for the encouragement by every legitimate means of the study and cultivation of the Gaelic language. Gaelic is one of the oldest of spoken languages. It is probably coeval with Sanskrit. It certainly is one of the oldest of the Aryan tongues. It is, therefore, one of the very few remaining original sources of knowledge of the long buried past. If ever we are to gain a truer and a completer view of the early history of civilization, it must be sought in the oldest languages that remain to us. One of the most serious charges against the two older English Universities is that while Gaelic and Cymric—the two surviving branches of the Celtic speech—are still spoken in the United Kingdom, nothing has been done by them to encourage and assure the proper study of these tongues. It is a still stronger condemnation of Trinity College. When that institution was founded Gaelic was the language practically of the whole Irish people. But Trinity has done nothing to promote the study of the language and enable the world to derive benefit from the study. The language since then has gradually decayed, and, as already said, it is now spoken only by a small minority. Still it lives, and while it does live it is of the greatest importance that it should be studied adequately and thoroughly, so that we may derive from its remains all the information that can be gathered regarding times and customs of which we have no other means of getting a knowledge.

At a meeting of the Sutherland Branch of the Educational Institute of Scotland, Mr. James A. Macdonald, H.M.I.S., delivered an address on "The Teaching of Grammar." He said that about eighteen months ago teachers were asked for an expression of opinion as to the need or otherwise for formal grammar. The result of that inquiry was embodied in the memorandum of the Department, and teachers were now freed from the chains of formal grammar, which had bound them so long. He quoted expressions of opinion from a number of teachers in different classes of schools, and replied to their statements. While informal grammar should be constantly taught, the arguments in favour of formal grammar were insufficient. Mr. Macdonald's conclusions were that the old formal parsing, with most of its terminology, must go; terms used must be justified; it must be recognized that grammar will not keep young people from making mistakes. It was only to a limited extent useful in interpreting literature. The lecturer then explained the terms which he would retain and which he would discard.

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THE Paris correspondent of the *Standard*, discussing the result of the system of establishing canteens in the primary schools of Paris, so that the children might have a warm midday meal, says:—The system has been tried, but has given rise to grave abuses, and the Municipal Council has named a Commission of Economies, which has been examining the methods of administration of the school canteens. These have hitherto been left entirely to the care of the local committees of each quarter of Paris, the city merely furnishing the funds asked for. The Commission of Economies has discovered, in the first place, that the number of children receiving free meals in certain parishes is altogether out of proportion to the really indigent population, and the cashiers of the school funds have been the more generous since it costs them nothing, and it was always the Municipal Council that made up the deficit. Second, in most of the canteens the price of the food is lower than its actual cost, which is a piece of gratuitous charity, since the poor children have their meals for nothing, and those who can pay could afford the cost price. The Commission of Economies proposes that free food should be given only to children whose parents are demonstrably unable to pay, and that a half-price course should be provided for those whose families, without being absolutely destitute, are not at all well off. It also cites the example of the twentieth *arrondissement*, which is one of the poorest, and where a meal is taxed at 15 centimes, or about three farthings, which costs a fraction of a farthing less, and thinks that this example might with advantage be followed universally. As a result, it calculates that an economy of £18,000 a year would be effected in the subventions given by the city of Paris to the school canteens, which is a sum worth saving if it can be done as suggested without damaging anybody's interests.

THE Cambridge correspondent of the *Times* writes:—While tracing in the dynastic histories of China the numerous allusions to a curious chariot in which there was an arrangement for registering the distances traversed, strongly suggestive of the modern taxicab, Dr. Giles, Professor of Chinese, has recently unearthed a complete specification of its mechanism, according to which it is quite possible to reconstruct such a vehicle. It appears that these taxicabs, to use a convenient term, were first mentioned under the Chin dynasty (A.D. 255–419); and from that time down to the middle of the fourteenth century frequent allusions to such vehicles known as "measure-mile-drum-chariots," are to be found in the dynastic histories. Under the year 1027 A.D., and again under the year 1107 A.D., full particulars are given as to their construction, the number of wheels, their positions, the number of cogs on each wheel, &c., being all definitely stated. On completing a translation of the specification, Prof. Giles placed it in the hands of Prof. Hopkinson, of the Engineering Laboratory, with the satisfactory result that, from a specification recorded by the Chinese some nine hundred years ago, Prof. Hopkinson has constructed a model of a wheeled vehicle which accurately registers the distances traversed. At each *li*, or Chinese mile, which is about one-third of an English mile, a drum is struck; while at every tenth *li* a bell is rung. A full translation of the specification is shortly to be published, with illustrations of the mechanism.

REFERRING to the late Mr. Arthur Butler, of Oriel College, the *Oxford Magazine* says:

Oxford owes him two great debts. It was he who mainly brought about the appointment of Archbishop Lang, as he now is, to be Vicar of St. Mary's, giving him thereby a University position in addition to that he held in his College; and it was he who, more than any one else except Mr. Rhodes himself, was the cause of the Rhodes Scholarships. The great gift was arranged after a hasty, perhaps too hasty, meeting between Rhodes and Arthur Butler at Oxford. Mr. Butler himself was very modest about his share in the matter, but did not deny, when pressed, that it was due to their old friendship and his encouragement that the idea came to the birth when it did. Oriel, then, owes him much and Oxford much, and, through Oriel, England and the Empire not a little.

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Cambridge.

A NEW Professorship is to be created, and we are to be congratulated thereon. The history of the matter is interesting and instructive. In 1889 the late Mr. R. S. Newall bequeathed to the University his large refracting telescope, and the sole charge of this instrument devolved upon his son, Mr. H. F. Newall, who for the past eighteen years has not only given his services to the University, but has also contributed to the stipend of his own assistant. Much excellent work in the domain of stellar physics has been done at the Newall Observatory, assisted by the McLean bequest of £5,000, to provide improved instruments. Finally, the Royal Society have generously offered to the Observatory the whole of the instruments formerly used by Sir William Huggins. The investigations of the late Sir George Stokes into the nature of the Frauenhofer lines in the solar spectrum first identified this branch of science with the University of Cambridge, and now the edifice will be completed by the creation of a Chair of Astrophysics. It goes without saying that the first occupant of the chair will be Mr. Newall. No stipend is to be paid, so that the generosity of the University will not be severely taxed, while some slight honorary return will be made to Mr. Newall for years of patient and valued work.

It never rains but it pours; no sooner has the new Professorship been established than another generous benefactor comes forward. Major E. H. Hills, C.M.G., R.E., has offered to the Observatory the spectroscopic instruments used by him in observing the eclipse of 1898. The collection includes a four-prism quartz spectroscope, which is probably the best instrument of its kind in existence.

Candidates for the Mechanical Science Tripos have now to pass a qualifying examination in Mathematics which is held twice a year, in June and at the end of November. This may be necessary, but it is an evil, as it interferes with the routine of the first year's work. It is now proposed to change the date of the second examination to the beginning of the October term and to throw it open, like the Little-go, to candidates who have not yet matriculated. This is a step in the right direction. There is an increasing tendency to discourage candidates entering the University until they are in a position to benefit by the facilities for advanced work that Cambridge affords. The elements of Latin, Greek, and mathematics are better learnt at school or in the country; and, though there are persons who come up here unlettered and unlearned, they are rapidly being made to see that they are exceptions and that the working man is the one for whom the University exists. The honest poll man has his place here, but every year he finds life harder for him.

In my notes for January I spoke of the appointment of Mr. J. P. Whitney to a Professorship at King's College, London. This entailed his resignation of the living of St. Edward's, which he has held with such acceptance for the last few years. The authorities of Trinity Hall, in whose gift the preferment lies, have been fortunate enough to find as Mr. Whitney's successor one of the most remarkable preachers of the English Church, Canon Thornton, late Vicar of Newquay, Cornwall. The new incumbent is certain to make his influence felt in Cambridge; possessing as he does abnormal strength and vigour, he attracts congregations irresistibly. St. Edward's, the pulpit of which has been filled by men like Harvey Goodwin, Lumby, Lias, Watson, and Whitney, will show no decline from its high standard of preaching.

The Syndicate appointed to consider possible alternatives to the General Examination has at length reported. The movement originated in a suggestion by Archdeacon Cunningham that the poll man should, if he liked, substitute for the general courses of lectures on miscellaneous subjects. Many members of the Senate signed a memorial for the appointment of a Syndicate, and this body at length has given us its conclusions. The original proposal was thrown over absolutely, but a new proposition was put forward as a suggestion by the majority—that two special examinations should be taken as an alternative to the general and one special, as at present. In the words of one of the speakers at the debate in the Senate, the Syndicate presented us with twins, one of which was strangled at birth, while the obsequies of the survivor were being celebrated in the Senate House. It was also remarked that, if the Syndicate thought their effort was a joke, it was an insult to the Senate; if it was meant to be a report, it was an insult to themselves. Not one word of argument did the report contain in favour of the startling change suggested, except the entirely banal remark that "some men are not sufficiently interested in the subjects of the General Examination."

The criticism evoked was of the most damaging character. Though the onus of proof lies upon those who advocate change, not one serious argument was raised in favour of such a course.

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It was pointed out by one speaker, and no contradiction could possibly be forthcoming, that, low as is the minimum standard both on the literary and on the scientific side of the present examination, the new proposals would sweep away all irreducible minima and enable the fourth-form boy who has successfully crammed the subjects of the Little-go to specialize forthwith. This is not all. The poll man would be allowed to specialize (?) not in one but in two subjects, and, if that were not enough, probably in three! The Cambridge degree would be obtainable by a candidate who, after passing the Little-go, crammed the necessary work for the "specials" in Music and Agriculture. Some of the speakers seemed to realize that mental training of some sort is necessary before the mind is ready for special work.

There is one fact that is borne in upon all those who deal largely with Cambridge men—a fact of which the University and the Colleges appear to be genuinely ignorant. It is that the faculty of intelligent expression is here practically dormant, and that little is done in some of the Triposes and less in the poll course to wake the sleeping powers. Many of our Cambridge reformers are too anxious to give men knowledge, to pour facts into empty heads with a funnel if necessary. But the whole question of the future of the poll man will soon settle itself; the Triposes will stretch out willing arms to rescue those whom the increasing demands of the poll examinations will frighten from the fold.

My prognostications as to the composition of the University boat proved to be fairly correct. Stuart is rowing bow, though the present writer believes that it is only through a sense of chivalry that he abandons the stroke thwart to one who, good as he is, has no pretensions to be of the same class as our President, the most consummate tactician and the most brilliant racing stroke of the past twenty-five years. Four at least of the men in the crew are his pupils from their rowing infancy, and it seems a pity that he allows his own judgment to be set aside by that of coaches who have not a tithe of his skill or experience.

Great activity prevails in military circles here. Thanks to the organizing powers of Colonel Edwards, ably seconded by Major Heycock (late Colonel commanding the Cambridge Volunteers), much has been done to render the outdoor work useful and attractive, while the teaching ability of Colonel Dyke, the military instructor, ensures thoroughness in the scientific training of all members of the corps. It is being rapidly recognized that the University offers a pleasant and profitable avenue to the Army.

The fact that Mr. James R. M. Butler, of Trinity, son of the venerable Master, has annexed the Craven Scholarship and the Browne Medal for the Greek Ode must duly be noted in these columns. There seems to be no limit to the possibilities of this meteoric young scholar of eighteen, who, absolutely unspoilt by success, is trying to rival the combined achievements of his two brilliant parents.

We were glad to see Dr. Jackson, the Regius Professor, back again with us once more, though still showing some traces of his severe illness.

Mr. Boughey, of Trinity, is giving up some of his college work to succeed Archdeacon Cunningham as Vicar of St. Mary's.

We have had a meeting of the Suffragists, but all was quiet. The politicians on both sides are preparing for the fray, and peaceable householders pray that no Dissolution will come before the undergraduates have left Cambridge and the May week behind them.

Manchester.

The Mining Department of the Manchester University has become associated with a number of the larger and more important collieries within easy reach of Manchester, and has acquired the privilege of introducing students who may not otherwise have facilities for access to collieries. Ten companies have consented to receive at their respective collieries, as articled pupils or apprentices to mining engineering, students recommended by the University. The two and three years' courses for coal mining students are so arranged that part of the time each week, during the second and third years, will thus be spent in the University and part at a colliery. Students of metal mining will spend at least three months in the summer of each year at a metal mine, for which purpose the department has similarly associated itself with metal mines in the Isle of Man and elsewhere.

ON THE GOVERNMENT OF CHILDREN.

WITH SPECIAL REFERENCE TO THE PLACE OF REWARDS AND PUNISHMENTS.

At the Evening Meeting of the members of the College of Preceptors on Wednesday, February 17, Professor Adams in the chair, Professor J. J. Findlay read the following paper:—

Every teacher knows that there is a perpetual conflict in our profession—in every country and in all grades of schools—on the topics which are to engage our attention this evening. And yet I may encounter reproach from some of my friends for proposing to discuss such a topic at all; for some of our educational reformers offer a very simple solution for the difficulties of school government. Children, they say, are only disobedient because they are ill taught. Feed them with food convenient for them; place them in the charge of well trained, experienced teachers; direct all your attention to improve the curriculum and the appliances for teaching; and then all those embarrassing and humiliating difficulties connected with school discipline will disappear of themselves.

Now I feel sure that we shall so far agree with this view as to admit that in the bad old days our calling was degraded by the excessive attention paid to deterrents. The very titles employed for our office—master, mistress, dominie—indicated a false conception of our relationship to the young: gradually the more honourable epithet of "teacher" is taking its place.* But, while sharing fully the humaner sentiment of a new generation, we should be doing grave wrong—wrong to our children, most of all—if we allowed these sentiments to obscure the truth. I, for one, cannot accept a conception of school government and of the teacher's function such as Tolstoy has mirrored for us in his famous experiment. I will readily grant that our chief attention must always be directed towards to the positive improvement of our methods; but in the most enlightened schools, and with the ablest and most kindly teachers, the problem of government still abides, and it merits the same careful analysis which is demanded by every aspect of our professional task. Nor is it solely a school problem: it is a family problem. Consciously or unconsciously, the heads of every household are bound to work out principles of control on which the child is to be trained: even the beasts of the field instruct us that the survival of the race depends upon discipline and order.

Hence I make no apology for asking you to spend an evening in attempting to analyse the conditions under which the child is governed.

§ 1. Let us, then, assume that the teacher has chosen employment for his scholars which is adapted to their stage of development and is congenial to their nature, which is calculated readily to secure their attention without distaste. Even then you may not succeed, for the child is so constituted that he has an imperfect mastery over his impulses: he wants to do *many* things; he is full of interests; and, at the moment when you desire him to attend to the chosen occupation, he may be otherwise engaged—engaged, perhaps, in a pursuit which may be not only congenial, but stimulating. Nevertheless, he has to be induced to respond to the particular employment which you indicate.

Furthermore, the child is a growing, developing creature; but at every moment there is a danger that this growth may be arrested on a low level. For one feature of growth is a growth in self-control, in concentration of purpose, in effort. Now in every worthy employment, whether it be doing sums or sawing wood, there is a point where the attention begins to flag, where the volatile child mind tends to relax. If on the first signs of wandering attention the teacher yields, in a fond belief that he is adapting his methods to the tender nature of the child, he is simply arresting the normal development and functioning of the creature; he is keeping the child back from attaining the powers, the habits towards which he ought to grow.

Thus, then, the problem of government† resolves itself into a problem of attention. When voluntary attention flags, how can we

* Although for sixty years the name of "preceptor" has made a gallant effort—crystallized in the title of the Society which meets under this roof—to supplant both of the others.

† I prefer the term "government" to "discipline," because the term "discipline" not only has a forbidding air about it, but it is used in a variety of senses.

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induce the scholar to make effort, to give involuntary attention, to inhibit his instinctive impulses to distraction, and thus to establish what the psychologists call secondary voluntary attention? I propose that we seek the answer to this question by an analysis of the *tendencies* at work in the scholar's mind which induce him to follow our lead. Thereupon these tendencies will indicate means by which we can secure our end.

(*a*) To begin with, every youngster is *instinctively* dependent and helpless, and thus "ready to do as he is told." This instinct has commonly been cultivated into a habit in the home environment, and will readily be transferred to the artificial environment created for his benefit at school or in private tuition. Thus the means for stimulus to effort are afforded by the simple fact of the situation: the teacher's presence is the indication that effort may be demanded and that distractions must be overcome. Our scholars know this, and in normal circumstances are disposed to the accustomed response. (Young teachers, when first handling a class, do not grasp the situation; if they could only behave as old hands, and count upon this normal response, they would usually get it. Here is eminently a situation where the beginner should "assume a virtue if you have it not.")

We assert that the normal procedure is to reinforce the primary instinct of submission by the force of habit, both at school and at home. Let us, however, not be misled by a crude psychology: in some instances the habit may operate at every hour of the day and in every classroom, but in others we may find habits of obedience remarkably specialized. A lad may be "as good as gold" at home, while he is quite a pickle at school; or he may be uniformly submissive to one teacher and yet give no end of trouble when transferred to the care of a colleague. Hence, while the resultant habit has to become mechanical, the means by which it is obtained are not mechanical, and every teacher has to see to it that his own disposition and attitude do their share to reinforce the instinct.

(*b*) This general habit of submission becomes identified with various *routine* performances which reduce the effort of attention to a minimum. Just as a normal person gets out of bed, takes his meals with a minimum of conscious effort, so the normal school child becomes used to the routine; the recurrent time-table, the tidy desk, the neat handwriting are all examples of the value of routine. The value reaches beyond the act itself, for it helps to reinforce the general idea of accepting the situation in which the scholar finds himself. Here the means towards good government are again indicated without difficulty. Regularity, machine-like repetition are indispensable. Everything that can safely be brought under the sway of automatism without injury to personal development should be so brought; and the teacher's influence, both in exercising uniform control and by the suggestion of his example, is paramount.

(*c*) As soon as we speak of suggestion, we see that the social sense of our scholar, the influence exerted upon him by his fellows, may be as powerful as that of the teacher. Indeed, the beneficent influence of comrades is so great that we rarely find competent experts preferring private tuition for a normal child. Since his social nature enables him to learn control more from the suggestion of his equals than from the precepts of an instructor, the teacher uses this means by indirection. At the outset of his association with a group of scholars, he aims to establish a tradition—a style and tone, a common feeling for control. Once established, the machine will run of itself with a minimum of effort on his part.

(*d*) Finally, in any large society, control has to be systematized by formulating positive rules and regulations. (I do not pause to consider the mode in which rules should be devised or administered—much can be done, I am convinced, by inviting the co-operation of the governed with the governors: the experiments in the self-government of schools which are being conducted here and there both in England and America are full of interest, but it would lie beyond our present purpose to consider them.) The habit of obeying formal regulations is an outgrowth of the primary instinct of submission: it implies an intelligent recognition of law as an inevitable part of life's scheme. Routine and social suggestion have relied upon the infant helplessness which first induced submission, and these in turn afford support to the judgment which leads the growing youth to a concurrence in the settled rules and requirements of an authority.

(*e*) I said "finally" just now; but it may be inquired whether another motive—and another means—are not at hand: for we observe that children are highly sensitive beings; their conduct is largely influenced by their affections or antipathies. Hence they may often be led to obey from feelings of like or dislike to their teacher: fear will depress tendencies to distraction; affection may stimulate and energize tendencies to self-control. Hence some text-books on education encourage us to adopt an attitude which relies upon the force of sentiment; and in the schools one may find cases where this theory is translated into most vicious practice. A teacher who believes in his own "personality" will establish intimate relationship with a few scholars, and, in consequence, will be unjust to those who fail to respond to these special bonds of sympathy. There are teachers who wish to be liked, who court popularity, who congratulate themselves on exercising a suggestive influence to which their colleagues cannot attain. In extreme cases this leads to favouritism and open partiality.

At the other extreme you witness the harsher failing: a teacher prides himself on belonging to the "old school"; he boasts of bearishness as a virtue; he is the man who "stands no nonsense"; he secures, oftentimes, the best immediate "results" because of his strong adult force which depresses the scholars' vivacity and compels the obedience of a slave to the dictates of a master.

Now, since children are, as we have seen, so characteristically emotional, these influences will always be playing their part in the classroom. However much we de-humanize ourselves, we cannot expect our scholars to act such a part. But I urge that it is improper for us, *under normal conditions*, to rely upon such motives to secure our ends. Personal regard is not a relationship which the teacher should foster, and the cultivation of affection, either positive or negative, as a motive to effort weakens the character of both parties. In the teacher it leads to the besetting vice of our calling—the lust of power and influence; the scholar is weakened, since his attention is centered on persons rather than on the pursuit to which the school invites him. It is only in abnormal situations, with exceptional scholars who are not amenable to ordinary motives, that a teacher can be safely suffered to resort to personal influence. A difficult child or a difficult class may sometimes be definitely assigned to a teacher whose personal qualities are marked. Weak natures may be drawn to make effort by appeals to affection. Stubborn natures may be constrained by the forceful rule of a tyrant; but, I repeat, these considerations should be dismissed from recognition in the ordinary relations of teacher and scholar. Whatever claim we may make in these degenerate days to serve as substitutes for the failure of family life, we must not intrude our personality into those intimate relationships which are sacred to the home.

§ 2. Thus, in brief outline, we have surveyed the situation under favourable normal conditions. And what a "good"—what a dull and stupid!—place school would be if all our boys and girls uniformly reacted on this simple happy scheme of things! —always behaving as "little gentlemen." Far be it from me, a grave professor of pedagogics, to hint that we should sympathize with sinners, or even, in holiday time, discover a sneaking regard for naughty children. Still, even the best of dishes want a flavour of salt, and we are not wholly disappointed when further investigation shows that there are instincts and tendencies which complicate the situation.

Over against each of the motives that we have discussed we have to set a *contrary* motive—which leads to *dis*order just as the first set of motives lead to order. Opposing that primary instinct of dependence, there emerges a growing impulse to *in*dependence, to self-assertion, equally valuable and ultimately more valuable for the race if not for the individual. And then a mood of contrariance* prevails; our very presence may be a stimulus to strengthen it; even routine, for a time, is experienced as an oppression instead of a relief to attention. When, further, the influence of companions reinforce disorder the trouble spreads, and the aid of suggestion on which, under other circumstances, we rely to save ourselves from active interference, proves a broken reed; for it is equally potent to distribute an atmosphere of independence or lawlessness. Then, finally, an individual, or a group of scholars, if unchecked, may be found (with a greater or less consciousness) ready to defy rule, to dissent from the established order.

Before proceeding to discuss means adapted to deal with this altered situation, let us pause to make sure of our own attitude: let us not conclude that there is reasonable ground for censuring this self-assertive scholar. Naughty children are not necessarily

* We have, I believe, to thank Mr. Keatinge for this term ("Suggestion in Education." A. & C. Black, 1907).

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vicious: the fact that our scholar wishes to attend to other matters instead of to his lesson is an obstruction to the teacher; but, when the momentary annoyance is past, we may be glad to have active spirits placed in our charge rather than insipid and placid jelly-fish. Such fine spirits present a problem to the teacher that is worth his handling: unless he can make an adequate response to their display, unless he can either control their will or satisfy their impulses, they will master him. For such vigorous natures, a weak teacher, a dull routine is simply "not good enough." In current slang, they "have no use for" such people. A stupid adult, of tyrannical habit, rapidly condemns such scholars as evil-doers and resorts at once to deterrents. Now, although, as we shall see, punishment has its proper place, we must keep the rod *in* pickle until it is really needed.

Here, then, is the situation which, in a thousand shapes, comes before daily experience: in every scholar, even the most patient and willing, there are conflicting tendencies—desires to break away as well as to conform; willingness to make effort, to accept the yoke and concentrate attention, crossed by centrifugal and dissipating tendencies, leading to distraction and rebellion. Are we at liberty to resort to other means which will help the scholar to solve this conflict, which—before he loses self control, before he has committed himself to active disorder—will reinforce the tendencies that make for obedience?

§ 3. Thus we arrive at the vexed question of rewards and punishments, which we may group together under the technical term *Incentives*. All that I can hope to do in this paper is to direct our attention to some of the general principles underlying their employment.

An incentive is a novel end or aim, more or less remote, offered to the mind to induce it to action which otherwise would not be performed. We note that the incentive is *in the mind*—within the scholar's experience, ready if need be to rise above the threshold of consciousness. The lesson in geography, let us say, is not in itself attractive, and the scholar is not induced to master it by habits of submission or by the example of his fellows. Incentives then play their part. Some pleasure will be attained if this disagreeable geography is attended to; some pain may ensue if it be neglected. With the very young it is evident that these ends must not be *very* remote, for the young mind cannot picture an injury or a benefit in the distant future; but with added years the range of vision extends

It is evident that, whatever may be our practice in our schools as regards a systematic regime of rewards and punishments, every one, scholar or adult, *is* influenced by incentives, of high or of low degree. And yet there are many who deprecate any express resort by the teacher to such means. Children, they say, should not be "bribed" by the stimulus of a reward; work for work's sake should be our only motto; both promises and threats, they say, will tend to lower the moral ideal. This protest sounds very attractive; he who employs such language can take a lofty attitude, and readily wins the applause of all kindly folk who wish well to children. If, however, the argument of this paper be taken from start to finish, we defend the practice on precisely the same grounds that the physician, whether allopath or homœopath, defends the use of drugs. They are only resorted to when it is found that the normal procedure of motives and means has failed; they are a temporary expedient adapted to the temporary, developing nature of the organism. Applied with discretion, with caution, with definite relation to an end, we hope to create a situation in which they are superfluous. Applied habitually on every occasion, they lead to disaster, for the patient falls a victim to the habit of living on incentives, just as some medical patients form opium habits or alcohol habits.

Thus we have in our class two scholars: one enjoys his arithmetic and finds it easy to give his whole attention (primary passive attention, as the psychologists call it); another finds it most irksome; he cannot concentrate his mind to the requisite extent. We thereupon apply the drug, the stimulus of a pleasure incentive; he controls his will (active involuntary attention); thus aroused, and with repeated efforts, reinforced by the memory of the incentive, he finally attains an acquired interest in arithmetic; he attends now without stimulus (secondary passive attention). If, however, after repeated applications of the incentive, this interest is not acquired, if no amount of effort enables the scholar to think in terms of number, we drop the treatment and confess failure.

§ 4. Again, incentives differ greatly in quality, and our judgment as to their moral value depends upon the kind we select. Those who vaguely denounce rewards or punishments are commonly found to be objecting not to incentives in general, but to particular forms which they regard as immoral. The medieval heaven and the medieval hell are not ours, but it appears that the most modern philosophy discovers a heaven and a hell of its own. Incentives are always at work: they are effective not only as regards their temporary function, but as regards their adaptation to the *stage of moral development* in the subject. Our ultimate hope is to substitute for a low incentive something loftier, which we call an ideal. But children are not idealists; they are only on the way to a higher life: if they were already fit to respond to the highest motives, our occupation as teachers would be gone.*

Hence the law as regards selection: to our little ones we should offer crude material stimulants to be quickly realized in pleasure or pain; but as the creature develops, offer him more distant, loftier prizes or sterner penalties until, finally, the grown man, fully formed, reaches out towards ideal ends. The good and faithful servant first receives praise, "Well done" (and this is an incentive which appeals to young and old alike), and then as guerdon the privilege of more responsible service, "ruler over many things." His counterpart, the slothful servant who had failed to respond either to the fear of a hard task-master or to the hope of reward—he, too, has passed beyond the stage of incentives; he goes forth to "weep in idleness." However far we adults have advanced in moral experience, can we presume to have reached a platform where the Parable of the Talents makes no claim upon us?

It is on such a line of argument, at once ethical and psychological, that I would defend the careful adoption in any school society of a guarded, but systematic, use of rewards and punishments—with one caution added. The physician always prescribes the *minimum dose* necessary to effect a cure, and the teacher needs rigidly to adhere to this law of economy. Any excess, whether of pain or pleasure, tends to focus the attention on the incentive and away from the object. If this occur, then a craving for the drug will be the result, and the double failure will ensue. Such considerations show that this field of operations constitutes the most delicate part of a teacher's business and demands all his skill and care.

§ 5. Hitherto we have discussed indifferently reward or punishment, pleasure incentive or pain incentive, as if either could be chosen at will. Both are available. Is the selection a matter of indifference?

Let us note the contrasted effect. A negative incentive depresses—fear chills the blood, damps the ardour; whereas the positive incentive is buoyant and exhilarating—hope rouses all our energies.† Clearly, on a first examination, the incentive that urges the subject forward should be preferred, and there are some who hold that, while rewards are to be approved, punishment of every kind is to be condemned. And yet, in other social spheres, we find a large place given to deterrents. The State holds that such incentives are in place, for it proclaims warning and threat to all offenders. But, since the incentive is *in the mind*, this warning is not a real incentive except to an offender—to the evil-minded person who intends crime, but has not yet found his opportunity. No one in this lecture hall intends to burgle or disturb the peace; hence the negative incentives of the police court are not incentives to us. Threats, in fact, are only appropriate to those who are already, in intention, wrong-doers. The positive incentives, the rewards for virtue, have all been in operation in their case and have failed. Now they are warned to "depart from evil" by a "wholesome fear of the Lord."

How, then, does the case stand as regards children? Unless we interpret the theological doctrine of original sin as stamping all children with intentional depravity, we must credit them—at first and in normal circumstances—with good disposition. Hence, then, the teachers' duty is clear: the positive incentive must be in the foreground; the deterrent must be kept out of sight and only used in emergencies. Praise is preferable to blame: our scholars achieve much under a regime where generous approval, new opportunity, and scope are offered in return for effort;

* Here I may notice in passing the remarkable studies made by Prof. Earl Barnes on "Children's Attitude toward Punishment" in his "Studies in Education," Vol. I). His investigation confirms one's own experience that, while the sufferer at the moment objects, as we all do, to the pain of the moment, the childish mind does not, on principle, deny either the justice or the value of punishment.

† See especially Bagley, "Class Management" (Macmillan, 1907).

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little can be looked for in an atmosphere charged with pains and penalties.

One difficulty, however, is often felt. We saw just now that an incentive might appear to be in operation whereas, to you or me, it is no incentive at all. In fact, there are often subtle difficulties in determining to which pole any given stimulant appeals. In a certain girls' school there is a custom of giving a prize on leaving the school to each scholar who has passed six years in the place without receiving a bad conduct mark. Now Lilian X. had achieved this reward, being a model stupid person; her fond father, thereupon, told Mabel X., the lively younger sister, that she must in due course achieve the same proud distinction. This stimulus has proved an intolerable punishment to poor Mabel: she goes in fear day by day of receiving a bad mark for some impish outbreak; her happy, genial nature is depressed. What the teachers devise as a stimulus becomes a decisive and chilling deterrent.

I need not point the moral: the effect of a stimulant to the mind is harder to trace than the effect of drugs upon the body. If incentives need to be applied, let us be sure that they do operate *in the mind* of the subject as we anticipate and that the stimulus arouses the response that we intend.

It would be easy to enlarge from this point and observe that many punishments (and rewards, too) are only such in name. It is a commonplace that many school punishments, such as detention, corporal chastisement, when inflicted repeatedly, lose their effect, simply because the offender has become habituated to their action; and, on the contrary, many children are mostly severely punished by a word of reproach, by a slight threat if they are of a sensitive nature or are only punished on rare occasions. It is a part of skilful school management so to contrive that when a pain incentive is required it shall, as often as possible, achieve its results with a minimum of effort to the teacher, a minimum of loss in power to the scholar, but a maximum of immediate arresting effect. But to undertake a discussion into forms of punishment would take us too far beyond our present purpose.

§ 6. Our comparison between the State and the school may yield a further point. The school makes much greater demands upon its scholars than the State upon its citizens: the State (at any rate, under present social conditions) does not require you to improve your mind or to cultivate your estate; you may make much of yourself or little—that is no concern of the commonwealth, and it neither praises nor blames your choice; it only interferes (with deterrents) when you disturb your neighbour.

But the school has a double function: (1) as a social institution, it has a duty similar to that of the State in securing the common order, in exacting an obedience from all for the good of the entire school society; but (2) it has to see to it that each scholar improves himself and really profits by the experience which each school day affords. Now it may be admitted that, as in the State so in the school, negative incentives are in place to aid in achieving the first function. For the normal procedure of the schoolroom, as regards attendance, regularity, decent behaviour, is matter of routine and habit which the ordinary scholar can easily obey without great effort of attention. He should not, even in early childhood, require the stimulus of reward to induce him to fulfil such early obligations, any more than the adult citizen looks to be rewarded for ordinary civic behaviour. If, then, an incentive be needed, the threat of punishment is in place. (We have only time, in passing, to note the extraordinary perversion of this principle in our English elementary-school system. Prizes for attendance are still awarded in all parts of the country.) But what of the second function of the school? (This is its real function, for the first is only a means to the end.) What sort of incentives are in place when we urge our scholars to improve themselves? In other words, what sort of associations are we to set up in our scholars' minds as between incentive and achievement? If, for example, I want my young friend to draw a good design, and his inclination is otherwise, am I to threaten or to encourage? The classic instance is that of Dr. Keate, of Eton—of enduring fame as a flogger. Keate is teaching the New Testament on a Sabbath morning, and reads the beatitude, "Blessed are the pure in heart." "Now, boys," says the genial pedagogue, "you must be pure in heart. If you won't I'll flog you till you are."

The conclusion is evident. If our purpose in teaching be to secure a formal external result, we may secure it by fear and threat; but the association thus established between school study and school penalty makes the memory of those studies a hateful memory. You cannot drive any man, young or old, to scholarship, to taste, to virtue. The more intimate and personal the culture you wish to offer him, the less can you hope to *make* him take his share through your superior power. This explains why all the educational reformers, from John Colet, of St. Paul's, to John Dewey, of Chicago, have no use for punishment. The ends which they have in view can simply not be attained by such means.

"But," it will be protested, "are children never to be punished if they neglect their lessons? If they are idle and inattentive at their sums, are they to remain so for fear of getting a dislike to mathematics?" Our analysis supplies the answer to this question. If the scholar's failure is due to general habits of idleness and carelessness, then to cure these a pain incentive *may* be in place. But if failure is due to a specific defect in his mastery of number, then a pleasure incentive *must* be preferred. Or, to put it in another way: you may punish a dog for running away, but not for refusing to eat his dinner. It is true that the school is provided to enable the scholar to improve himself, and every effort should be made to help him to that end. But, after all, school is not life: there are some to whom scholastic pursuits do not appeal; such natures have their right, and if the horse, being led to the water, declines to drink, let Nature have her way. Even in medicine, physicians meet with patients, now and again, whom they cannot cure: we, too, may be permitted a percentage of failures.

§ 7. And we will carry our argument one point further. We saw that the only apology for the employment of incentives was to enable the subject to recall his attention to the matter in hand. Now, are we sure that the suggestion of an incentive at the moment *does* always succeed in its purpose? We must here be very careful, for the mind is not so easily controlled. To achieve a new thought in geometry, to plan a new route in geography, to translate a passage of Latin, requires complete isolation of the mind from external influence. Now if, while the mind is thus endeavouring to get the data clear, or to call up the appropriate apperceiving material, I suggest the prospect of a good mark for success, or of any other incentive, do I not run the risk of disturbing the whole machine?

I have of late years narrowly observed this problem, and am convinced that teachers often fail by not recognizing the need for favourable emotional calm as a condition for intense mental activity. I do not allude solely to methods, such as place-taking, which are now discredited, but to the more subtle danger incurred by stirring up personal feeling while endeavouring to solve a problem. Under the most favourable conditions, children find it difficult to suppress feeling: hence, one important element in class management is to secure an undisturbed process. The suggestion of *any* incentive thus appears to be out of place. If such a stimulus lie in the background of consciousness, affording a diffused sense of support to effort, it may do no harm, but any plans which thrust the incentive in the foreground must be deprecated.

You will see that this caveat only applies to work in which the scholar is concentrating his mind on a new field; but there is a good deal of activity in school which is not of this nature: when rules have to be practiced by repetition, when mechanical accuracy has to be attained with steady drudgery, then the incentive may be allowed to operate with greater freedom.

I am very conscious that I have carried my hearers over a rather dull survey of principles, and I may properly be charged with putting into psychological jargon the plain common sense of wise teachers. I shall plead guilty to this charge, but must ask you to bear in mind that there is no branch of our professional work in which there is so much superficial dogmatism or in which we are liable to be overborne by outside opinion. All I have attemped to do is to show what considerations are to hand in *the nature of our children's minds* to serve as a guide to our practical work in the classroom. In writing this paper many illustrations out of my own experience, and not a few experiments in testing the value of incentives, have come back to my memory; but I felt that I might be of more service if I confined our attention to the more prosaic field of general principles.

Prof. BONSOR thought the most valuable incentive to discipline was a sense of duty on the part of the pupils. In the earlier stages the emotion of fear might be employed as an incentive to the formation of habits which would finally grow into a sense of duty. The element of

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interest might be extensively used, but care must be taken not to allow this element to predominate, or the result would be disorder instead of discipline. This was, he thought, the experience of Dr. Bagley, of whose work he knew something, and who, in his earlier days, attached too much importance to the element of interest.

Mr. ANSTEY thought that the effect of praise or blame depended largely on the personality of the teacher.

Mr. B. C. WALLIS said that in teaching mathematics he had found that there was little need of incentives when the media in which a subject was taught were changed to suit particular classes under a definite systematic presentation of the subject.

Mr. BATEMAN said that one of the greatest difficulties with which the teacher had to contend was the objection of parents to the punishment of their children, however well deserved such punishment might be. There was a very prevalent impression that disgrace was inherent in the punishment and not in the offence.

Miss WESTON said that, after trying many things, she had come to the conclusion that the greatest incentive to study was the desire for discovery, and especially of self-discovery. Teachers should address all their efforts towards the encouragement of this desire. If a child could be induced to believe that there was something in him which he did not realize, he would work very diligently without fear of punishment. In cases of failure in particular studies it was important to impress the pupils with the idea of their own ability. It was difficult to lay down rules as to rewards and punishments. In every case the question must be determined by the attendant circumstances, and a practical teacher would find no difficulty in coming to a decision.

Mr. BUNTING said that parents' objections to punishment disappeared when once it was realized that the punishment was logical. Penalties must be adjusted to circumstances. In the case of a class of 120 pupils there must be more punishment than in a class of only 20. In slum schools, where rewards were looked upon as weakness on the part of the teacher, an endeavour must be made to approximate to the home conditions. At first the only thing that appealed to the child was this similarity, but afterwards he recognized that the punishment was just. The aim of the teacher should be to reduce both reward and punishment to a minimum. Incentives must come into play, but as soon as the child could be taught that duty was the highest incentive, other means of stimulating mental activity could be dispensed with.

Mr. ORCHARD agreed that it was desirable to have some system of rewards and punishments, but care should be taken that the rewards were suited to the character of the pupil and also to the character of the work, and they should not be made too prominent.

Prof. FINDLAY having replied to the various speakers, a vote of thanks to the lecturer concluded the proceedings.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College of Preceptors, Bloomsbury Square, on February 13. Present: Sir Philip Magnus, President, in the chair; Prof. Adams, Prof. Adamson, Dr. Armitage-Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Brown, Mr. E. A. Butler, Mr. Charles, Miss Crookshank, Mr. Eagles, Mr. Eve, Mr. Ladell, Rev. R. Lee, Dr. Maples, Mr. Marx, Mr. Milne, Dr. Moody, Mr. Morgan, Mr. Pendlebury, Mr. Pinches, Mr. Rule, Rev. Dr. Scott, Mr. Vincent, and Mr. White.

The minutes of the last meeting were read and confirmed.

Diplomas were granted to the successful candidates at the Christmas Examination of Teachers (see list, page 127). The prize of £10 for Theory and Practice of Education was awarded to Mr. J. H. Brown, and the prize of £5 for Natural Sciences was divided between Mr. M. H. A. Galbraith and Mr. W. D. Hambly, who were bracketed equal.

In accordance with the resolution adopted by the General Meeting on January 23, it was referred to a Special Committee to consider "whether by any methods the work and usefulness of the College may be increased."

A report of the Finance Committee, which included a recommendation that the gratuitous issue of books of examination papers to members of the College should be discontinued, was adopted.

The Examination Committee submitted a report recommending the following modifications in the syllabus of the Certificate Examinations for the year 1910:—

I. In the subject of Drawing, the syllabus to be amended as follows:—

Third Class.—(*a*) Drawing from the Flat, *or* (*b*) Simple Model Drawing.

Second Class.—(*a*) Model Drawing (from groups of common objects), and (*b*) *either* Memory Drawing, *or* Drawing from the Flat.

First Class.—(*a*) Model Drawing (from groups of common objects), and (*b*) *either* Memory Drawing, *or* Linear Perspective and Mechanical Drawing.

II. In the subject of Geography, the syllabus for the Third Class and the general part of the Second Class to be amended as follows:—

Third Class.

Explanation of simple geographical terms (as "isthmus," "peninsula," &c.). (*a*) The British Isles (with a map of some portion), including the chief rivers, the general distribution of highland and lowland, of wet and dry regions, of coal and iron, of the chief occupations, the situation of the most important towns, with simple reasoning thereon. (*b*) The Continent of Europe on similar lines to the above, the position of the chief countries and their capitals, the situation of the most important towns, the courses of the Rhine, Rhone, Danube, and Volga.

As alternative to (*b*)—simple questions on the British Empire, the position and characteristic features of the several parts, and lines of communication with the mother country.

An alternative paper, on the Geography of South Africa, will be set for South African candidates only.

Second Class (General).

The distribution of land and water. General notions of climate. Wind belts and chief ocean currents. Day and night. The seasons. Time. Meaning of latitude and longitude. The boundaries of the several continents. The general distribution in each continent of highland and lowland, of wet and dry regions, of the chief minerals, of occupations. The source, general direction, and outflow of the main rivers. The position of the most important countries and their capitals.

The report was adopted.

The Report of the *Educational Times* Committee was submitted, and was referred back to the Committee for further consideration.

Sir Philip Magnus, M.P., was elected President of the Council, and Prof. Adams, the Rev. Canon Bell, and Mr. E. A. Butler were elected Vice-Presidents.

Mr. H. W. Eve was appointed Dean, and Dr. Armitage-Smith Treasurer of the College.

The Moderators, Examiners, Inspectors, and Revisers for the year 1909 were appointed.

The four Standing Committees were appointed, with their respective chairmen.

The following persons were elected members of the College:—
Mr. H. H. W. Brice, A.C.P., The Hollies, Castle Cary, Somerset.
Miss E. E. H. Gawdery, Lyndale College, Shelley Road, Worthing.
Mr. A. Robson, B.A. Lond., L.C.P., 2 Lance Road, Harrow.
Mr. H. Ames, A.C.P., 20 Hemington Avenue, Friern Barnet, N.

The following books had been presented to the Library since the last meeting of the Council:—

By DR. G. T. MOODY.—Betts's Patent Portable Globe.
By E. ARNOLD.—The Sesame Poetry Books I.-VII.
By BLACKIE & SON.—Blackie's English Texts (Bede's History of the Church of England, and Macaulay's Essay on Sir William Temple).
By the CAMBRIDGE UNIVERSITY PRESS.—Higher Local Examination Class List, Papers, &c., December, 1908.
By W. B. CLIVE.—Matriculation Directory, January, 1909; University Correspondent, 1908.
By MACMILLAN & Co.—Brett's Representative English Poems; Bruton's Selections from White's Natural History of Selborne.
By METHUEN & Co.—Methuen's Simplified German Texts (Der Müller am Rhein, Die Nothelfer, and Undine und Huldbrand); Terry's Teacher's Handbook to Elementary Latin.
By the OXFORD UNIVERSITY PRESS.—Oxford Plain Texts (6 parts); Bué's Berthet's Le Donanier de Mer; Herodotus, I.-IV.; Lauvrière's De Vigny's Chatterton; Paterson's School Algebra, Part II.; Sargeaunt and Raynor's Famulus of Terence; Walpole's Gospel of St. Mark.
By RELFE BROS.—Fudge's Vivid Pictures from Carlyle's French Revolution; Haynes's Preliminary Geography of British Isles and India.
By RIVINGTONS.—Hillard and Botting's Elementary Greek Exercises.
Calendar of Trinity College of Music, London.
Calendar of University of Wales.
Calendar of University College, Nottingham.
Calendar of University of Liverpool.
Calendar of Pharmaceutical Society of Great Britain.
Register of Graduates of Victoria University of Manchester.
Register of Members of the General Council of the University of Glasgow.
Register of Veterinary Surgeons.

THE Report for 1908 of the President of Yale University states that plans for the immediate future at the University involve the development of courses in regional geography until there are instructors who are authorities on the geography of each of the continents. This will eventually necessitate the erection of a separate department of geography, which will not only offer courses, but will also conduct explorations in the less known parts of the world, particularly those parts where the character of the physical features has been a prominent factor in the life of a race, such expeditions being in charge of officers of the department and including advanced students.

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CURRENT EVENTS.

Fixtures.

At the meeting of Members of the College of Preceptors on Thursday, March 25, Mr. J. L. Paton will read a paper on "The Educational Value of Play."

* * *

Madame C. Bagnall will address the Société Nationale des Professeurs de Français en Angleterre on "Des Progrès du Mouvement Féministe en Angleterre" at the College of Preceptors, on March 27, at 4 p.m.

Honours.

The University of Oxford has conferred the honorary degree of D.C.L. upon his Excellency Louis Renault, Professor of International Law in the University of Paris, and the honorary degree of D.Sc. upon Dr. Sven Hedin.

* * *

The University of Liverpool has resolved to confer the honorary degree of LL.D. (May 1) upon Lord Derby (the new Chancellor), Mr. Balfour, Lord Charles Beresford, the Earl of Crewe, Mr. Marconi, Mr. Birrell, Sir John Brunner, Lord Roberts, Principal Macalister, Prof. Vinogradoff, Mr. Robert Gladstone (Chairman of the Mersey Docks and Harbour Board), and Dr. Richard Caton (ex-Lord Mayor of Liverpool).

* * *

The University of Edinburgh has resolved to offer honorary degrees as follows:—

D.D.: Rev. John Brown, Bellahoustoun; Prof. Emile Dumergue, Montauban; Rev. William Fairweather, Kirkcaldy; Prof. J. Hope, Moulton, Manchester; Principal Wann, Scottish Churches College, Calcutta.

LL.D.: J. M. Barrie; J. G. Bartholomew, Edinburgh; Emeritus Professor Crum Brown, Edinburgh; Alexander Carmichael, F.S.A.; Lord Dundas; Prof. Gilray, University of Otago; Sir Alfred Keogh, Director-General of the Army Medical Service; Prof. Kronecker, University of Berne; Prof. Luzzatti, Rome; John Edwin Sandys, University of Cambridge; Rev. Emeritus Professor Taylor, Edinburgh.

* * *

The Senatus of St. Andrews University have agreed to confer the following honorary degrees:—

D.D.: Rev. J. Haggart, Lochcarron; Rev. Sir John Cæsar Hawkins, Oxford; Rev. Canon M'Culloch, Episcopal Church, Portree; Rev. P. M. Playfair, Parish Church, St. Andrews; Rev. D. R. Robertson, Clepington Parish Church, Dundee; Prof. E. F. Scott, Halifax, Nova Scotia.

LL.D.: Prof. James Walker, Edinburgh; Prof. Boas, Inspector, London County Council; Mrs. Bosanquet, wife of Prof. Bosanquet; Sheriff C. N. Johnston, Perth; Mr. A. H. Millar, Librarian, Dundee; Mr. N. H. Thomson, Florence.

* * *

The Gold Medal of the Royal Astronomical Society has this year been awarded to Dr. Backlund, Director of the Central Nicolas Observatory, Pulkowa.

* * *

Dr. Ludwig Mond, F.R.S., Managing Director of Messrs. Brunner, Mond, & Co., has been elected a Corresponding Member of the Berlin Academy of Sciences.

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Dr. H. A. Miers, M.A., D.Sc., F.R.S., Principal of the University of London, has been elected to an honorary Fellowship at Magdalen College, Oxford.

* * *

The Rev. James John Hornby, D.D., Provost of Eton College, has been elected to an honorary Fellowship at Brasenose College, Oxford.

* * *

M. Henri Berthon, Taylorian Lecturer in French, Oxford, has received the order of Officier d'Académie in recognition of his services to French literature and scholarship in England.

Scholarships and Prizes.

Oxford Colleges offer scholarships for competition as follows:—In Classics: March 9, Merton and Brasenose; March 16, Magdalen; May 11, Pembroke; June 25, Worcester. In Mathematics: March 2, Magdalen and Brasenose, Christ Church, and Worcester. In Natural Science: March 9, Keble; March 16, Merton, Exeter, and New Colleges; June 29, Brasenose. In History: March 17, University, Merton, and Brasenose; May 11, Pembroke; June 25, Worcester. In English: June 25, Worcester. In Modern Languages: June 25, Worcester.

* * *

Exeter College, Oxford, offers two exhibitions, £40 a year each, for English, or French, or German, Language and Literature. No limit of age. Examination, May 11. Apply to the Rector by April 24.

* * *

The examination for Foundation Scholarships at Eton College will be held on July 6–8. Forms and particulars from the Clerk to the Provost and Fellows, the Bursary, Eton College.

* * *

The Grocers' Company offer two scholarships for original research in sanitary science, each £300 a year (with allowance for apparatus, &c.), tenable for one year, and renewable for a second or third year. Apply, by April 1, to the Clerk of the Grocers' Company, Grocers' Hall, E.C.

* * *

A Competitive Examination, to fill about sixteen studentships at the Duke of York's Royal Military School, Chelsea, the Royal Hibernian Military School, Dublin, and the Queen Victoria School, Dunblane, will be held June 15–18. Candidates must be between sixteen and nineteen on May 31 next. Applications to be admitted as candidates should be made not later than May 31, in writing (in unstamped letter), to the A.A.G., Army Schools, War Office, London.

Endowments and Benefactions.

Oxford University, by establishing an Honour School of Engineering, becomes entitled to the reversion of a legacy of £1,000 and a collection of books on engineering, left by the late Mr. L. F. Vernon Harcourt, C.E.

* * *

The Skinners' Company have renewed, for a further period of five years, their annual grant of £500 to the Leather Industries Department of the University of Leeds.

* * *

Lord Winterstoke has given £15,000 towards the proposed University of Bristol, in addition to a previous contribution of £20,000.

Mr. Edward Channing Wills has given £10,000 to the Bristol University Fund.

* * *

An appeal is made for £50,000 for Girton College, to pay off the debt on the new buildings, and to leave a margin for scholarships and for the endowment of research.

* * *

The University of Glasgow has been left the reversion of one-fourth of the residuary estate of the late Dr. Francis Elgar, to be applied to the John Elder Chair of Naval Architecture.

It has received £1,000 from Sir Thomas Glen Coats towards the acquisition of a new recreation ground.

* * *

Heidelberg University has received a gift of £6,500 for the foundation of a Radium Institute.

* * *

Mr. John D. Rockefeller has made a further gift of £250,000 to Chicago University.—Messrs. David B. Jones and Thomas D. Jones, of Chicago, have given £40.000 to Palmer Physical Laboratory Endowment Fund at Princeton University.—The Alumnae Association of Bryn Mawr College has presented to the College £20,000: the first instalment of the sum of £200,000, which the alumnae have undertaken to raise for the further endowment of the Chairs.—The £20,000 needed for the D. K. Pearson Building and Endowment Fund of Middlebury College has been all but fully contributed.—The James Millikin University, Decatur, will get some £20,000 under the will of Dr. James G. Wheeler.—Mr. R. T. Scott, Cadiz, has sent £2,000 to the Ohio State University for the aid of poor students.

Appointments and Vacancies.

The Rev. George Edmundson, M.A., late Fellow of Brasenose College, has been elected Ford's Lecturer for 1909–10 in Oxford University.

* * *

Dr. Herbert Lister Bowman, M.A., D.Sc., New College, has been appointed Waynflete Professor of Mineralogy in the University of Oxford.

* * *

An examination for the Reid Professorship of Penal Legislation, Constitutional and Criminal Law, and the Law of Evidence, in Dublin University, will be held in Trinity College on June 8–10.

* * *

Prof. Strong will resign the Chair of Latin in Liverpool University in September next, after twenty-five years' service.

* * *

In Manchester University, Dr. W. H. Lang, M.B., D.Sc., Lecturer in Botany, Glasgow University, has been appointed to the new Chair of Cryptogamic Botany; Miss Maria C. Stopes, D.Sc., Ph.D., Special Lecturer in Palæobotany; Mr. Edgar Prestage, Corresponding Member of the Lisbon Royal Academy of Sciences, &c., Reader in Portuguese; and Mr. T. H. Pears, B.Sc., of University and King's College, London, Lecturer in Experimental Psychology.

* * *

Sir Thomas H. Holland, K.C.I.E., D.Sc., F.R.S., Director of the Geological Survey of India, has been appointed Professor of Geology in Manchester University, in succession to Prof. Boyd Dawkins.

* * *

Mr. George F. Shirras, Fellow of the Royal Economic Society, Assistant District Commissioner for Southern

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Nigeria, has been appointed Professor of Economics at Dacca, Eastern Bengal.

* * *

THE Principalship of Saltley Training College will be vacant at Midsummer through the retirement of the Rev. Canon Burbidge.

* * *

MR. W. A. ROBERTSON, M.A., Ph.D. Marb., English Master, Mackie Academy, Stonehaven, has been appointed a Junior Inspector of Schools under the Scotch Education Department.

* * *

THE St. Andrews Provincial Education Committee has appointed Mr. J. W. Williams, M.A., F.R.Hist.S., of Exeter College, Oxford, to the Lectureship in History at the Dundee Training College; and Mr. J. P. Day, M.A., F.R.G.S., Bournemouth, Lecturer in Geography for one year.

* * *

THE Girls' Public Day School Trust have appointed Miss C. W. Matthews, M.A. Dub. (Med. and Mod. Lang. Trip., Newnham College), to be Head Mistress of Dulwich High School; and Miss A. S. Barratt, second mistress, Wimbledon High School, to be Head Mistress of East Liverpool High School.

* * *

MR. PERCY MORTON, M.A. Oxon., Science Master and House Master, Christ College, Brecon, has been appointed Head Master of Brecon County Intermediate School for Boys.

* * *

MR. RALPH J. RITTENBERG, B.A. Lond., Senior Mathematical Master, Guildford Grammar School, has been appointed Head Master of the County School, Bude.

* * *

MR. THOMAS H. KNIGHT, M.A. Cantab., assistant master, City of London School, has been appointed Head Master of Wilson's Grammar School, Camberwell, in succession to the Rev. F. McDowell, D.D., retired.

* * *

MR. HENRY E. ATKINS, M.A. Cantab., assistant master, Wyggeston School, Leicester, has been appointed Head Master of College Municipal School, Huddersfield.

* * *

MR. NORMAN L. FRAZER, B.A. Cantab., M.A. Lond., Master of Modern VI., Whitgift Grammar School, Croydon, has been appointed Head Master of Batley Grammar School.

* * *

MR. ALBERT B. HOLMAN, M.A. Cantab., Chief Assistant Master, has been promoted Head Master, of Nuneaton Grammar School.

* * *

MR. ROBERT IVOR JONES, M.A. Oxon., assistant master, Epsom College, has been appointed Head Master of the Intermediate School, Newtown, Montgomeryshire.

* * *

MR. HAROLD KITTO, M.A. Oxon., Assistant Master and House Master, St. Lawrence College, Ramsgate, has been appointed Head Master of Faversham Grammar School.

Literary Items.

MESSRS. METHUEN are publishing "The Last King of Poland and his Contemporaries," by Mr. R. Nisbet Bain, and "The Conflict of Religions in the Early Roman Empire," by Mr. T. R. Glover, who attempts to treat Christian and Pagan with equal fairness.

A NEW edition of Craik's "Manual of English Literature," thoroughly revised and brought up to date by Mr. Ernest Rhys and Mrs. Podmore, is to be included in an early issue of "Everyman's Library."

General.

A FEDERATION of University Women for Liverpool and District has been formed, after the example of Manchester. The objects are: (1) To facilitate the intercommunication and co-operation of University women; (2) to express the united opinion of University women on subjects which are of special interest to them; (3) to promote women's work on public bodies; (4) to work for the removal of sex disabilities.

* * *

THE Italian Minister of Education, Signor Rava, has pledged himself to the complete restoration of the University of Messina. Italy has sixteen other State Universities, two of them in Sicily (Palermo and Catania).

* * *

IN July the University of Geneva will celebrate its 350th anniversary and the 400th anniversary of the birth of John Calvin.

* * *

A ROYAL COMMISSION has been appointed by the Government of Western Australia to consider the question of the establishment of a Western Australian University.

LOCAL AUTHORITIES AND PRIVATE SCHOOLS.

WITH regard to the action of Local Authorities in respect of private schools (says the annual report of the Private Schools Association) there seems little to add to what has been said in former years. A few Local Authorities are making use of private schools for the education of scholarship pupils, but there is no evidence of any likely development in this direction. On the other hand, there is plenty of evidence that the Administration of the Education Act of 1902 continues adversely to affect private schools. Some Authorities, bent on superseding instead of supplementing the existing supply of education, have shown themselves unreasonably hostile to private schools, and, in their anxiety to win over rate-payers, who show an inclination to resent any increase to the burden of the rates, have publicly proclaimed that they propose to give them for £9 a year what cost £17, thus practically making them a free gift of £8 a year towards the education of their children. The plausibility of such an argument is alluring, but its fallacy is self-evident.

To the spreading revolt against the burden of the rates—to what has been called "The Bitter Cry of the Towns"—consideration for the interests of private schools has contributed nothing. Their cruel position will remain materially and essentially what it is so long as funds are forthcoming, whether from local rates or from the Imperial Exchequer, to supply secondary education at less than cost price to those who are pertectly well able to pay the full cost of such education.

In connexion with the question of the action of Local Authorities, some mention must be made of the survey of private schools in London. The work was undertaken by a Committee with Mr. Maxwell as chairman, and with the help and advice of Mr. H. R. Beasley acting in an honorary capacity, and was the outcome of a request for particulars of the private schools of London made by the L.C.C., who are about to make further provision for secondary education. From the returns sent in it is estimated that, in the 468 private schools which are known to exist, there are 26,985 pupils being educated, nearly 42 per cent. of which are twelve years of age and over. A return was made to the L.C.C. giving a classification of pupils according to age and giving tables for the different L.C.C. districts. This return has been published in the latest Report of the L.C.C. Education Committee.

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COLLEGE OF PRECEPTORS.—TEACHERS' DIPLOMA EXAMINATION.

CHRISTMAS, 1908.

THE Christmas Examination commenced on the 28th of December and was held in London and at the following Local Centres:—Banchory, Belfast, Birmingham, Bolton, Bristol, Dublin, Kyle, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; and at Mannheim (Germany); Calgary (Canada); Jubbulpore, Ootacamund, and Pondicherry (India); Prome (Burma); Capetown: Umzinto (Natal); Georgetown and New Amsterdam (British Guiana); and Anking (China).

The total number of candidates examined was 529.

The following are the names of the candidates who passed in the various subjects: (*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject:—

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Richards, T. M.
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Richards, T. M.
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Rotherham, C. L.
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Stevens, W. S.
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Toyer, R. V.
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West-Handford, F. J.
Wightman, J. C.
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Dawkins, D. J.
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Henderson, A.
Hockaday, S. G. B.
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Griffiths, J. T.
Shellock, F. G.
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Copley, G. A.
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Creese, S. H.
Dawkins, D. J.
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Faux, Miss L. B.
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Toyer, R. V.
Wilson, C. E.
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g. = Geology.
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Stephenson, R. R.
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Sunderland, G.
Sykes, P.
Tate, N. T.
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Wilson, Miss J. E.
Wrin, M. F.
Wylam, J.
Yardley, Miss L.
York, Miss L. M.

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The Prize for **Natural Sciences** was divided between Malcolm Harry Alfred Galbraith and Wilfrid Dyson Hambly, who were bracketed equal.

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5. Papers set at Professional Preliminary Examination, March, 1908.
6. Do. do. do. September, 1908.
7. Papers set at Lower Forms Examination ... ... Summer, 1908.
8. Do. do. ... ... Christmas, 1908.

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FRANCIS HODGSON, 89 FARRINGDON STREET, LONDON, E.C.

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CLASS LISTS

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—CHRISTMAS, 1908.

LIST OF SUCCESSFUL CANDIDATES AT COLONIAL AND FOREIGN CENTRES.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—

a. = Arithmetic.	*du.* = Dutch.	*gr.* = Greek.	*ma.* = Magnetism & Electricity.	*s.* = Scripture.
al. = Algebra.	*e.* = English.	*h.* = History.	*ms.* = Mensuration.	*sc.* = Elementary Science.
b. = Botany.	*f.* = French.	*he.* = Hebrew.	*mu.* = Music.	*sh.* = Shorthand.
bk. = Bookkeeping.	*g.* = Geography.	*i.* = Italian.	*nh.* = Natural History.	*sp.* = Spanish.
ch. = Chemistry.	*ge.* = German.	*l.* = Latin.	*p.* = Political Economy.	*tr.* = Trigonometry.
d. = Drawing.	*geo.* = Geology.	*lt.* = Light and Heat.	*ph.* = Physiology.	*w.* = Welsh.
do. = Domestic Economy.	*gm.* = Geometry.	*m.* = Mechanics.	*phys.* = Elementary Physics.	*z.* = Zoology.

The small figures [1] and [2] prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.T. = Pupil Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

[Bracketing of names denotes equality.]

BOYS.

First Class [or Senior].—Honours Division.

Cocks, M.B. *s.e.g.*	Private tuition
Jensen, A.E. *al.gm.ch.*	Marist Bros.' Coll., Johannesburg

First Class [or Senior].—Pass Division.

Sundaram, P.	Private tuition
Cretin, J.	Boys' High S., Allahabad

Second Class [or Junior].—Honours Division.

Bain, S.J. *e.f.*	Grenada Gram. S.
Wijewardene, D.E. *e.*	Central Coll., Colombo
Oosthuysen, M.J. *ch.*	Marist Bros.' Coll., Uitenhage
Wickramasingha, C.D. *ch.*	Private tuition
Paul, L.D.F.J. *al.gm.*	Private tuition
Sivapragasam, T.	Private tuition
Grant, P.D. *gm.*	Marist Bros.' Coll., Uitenhage
Jansz, R.V.	Lorenz Tutory, Colombo
Prescod, C.W.	Private tuition
Thorne, S.G. *f.d.*	Marist Bros.' Coll., Uitenhage
Panchalingam, C. *d.*	City Coll., Colombo

Second Class [or Junior].—Pass Division.

Sivapragasam, V.	Central Coll., Colombo
Redlich, K.N. *e.*	Private tuition
Albers, G.L.	Marist Bros.' Coll., Uitenhage
Perera, C.O.	Lorenz Tutory, Colombo
Tweedie, G. *du.*	Sacred Heart Conv., Klerksdorp
Russ, V.H.	Marist Bros.' Coll., Uitenhage
Ranger, V.M. *ch.*	Marist Bros.' Coll., Uitenhage
Wagner, G. *f.*	Marist Bros.' Coll., Uitenhage
Sylvester, N.G. *bk.*	Private tuition
Ohlmus, W.	Private tuition
De Zylva, H.K.T. *e.f.*	Private tuition
Gately, L.	St. Aidan's Coll., Gramhamstown
Fernando, G.V.	Private tuition
Tamber, R.R.	Private tuition
[1]Hardie, J.R.	Lomas Acad., Lomas de Zamora
O'Shea, A.	St. Aidan's Coll., Grahamstown
Pearson, C.B.	Marist Bros.' Coll., Uitenhage
Sinnatamby, G.S.	City Coll., Colombo
Norton, O.I.	Marist Bros.' Coll., Uitenhage
Albers, H. *du.*	Marist Bros.' Coll., Uitenhage
Sage, N.C.	Marist Bros.' Coll., Uitenhage
Bertus, L.S. *f.*	Private tuition
Zanetti, V.G.	Private tuition
Perera, S.H.	Private tuition
Fernando, J.V.	Private tuition
Voskule G.J.	Marist Bros.' Coll., Uitenhage
Sackey, W.E.	Mfantsipim S., Cape Coast
Don, C.D.	Central Coll., Colombo
Harrison, C.	St. Aidan's Coll., Grahamstown
Donovan, F.J.	Marist Bros.' Coll., Uitenhage
Peterson, P.R.C.	Private tuition
Henwick, S.	Marist Bros.' Coll., Uitenhage
Misso, H.W. *d.*	Private tuition
Metelerkamp, L. *du.*	Marist Bros.' Coll., Uitenhage
Perera, A.B.	Lorenz Tutory, Colombo
Donaldson, T.W. *bk.sp.*	Lomas Acad., Lomas de Zamora
[1]Wilkinson, E.L.	Comenius Sec. S., Georgetown, B. Guiana
Froneman, H.	Marist Bros.' Coll., Uitenhage
[1]Guillaume, A.M.	Private tuition
Pettit, H.	Marist Bros.' Coll., Uitenhage
Buckman, J.	Mfantsipim S., Cape Coast
DeKretser, E.C.	City Coll., Colombo
Goodger, D.A.	Marist Bros.' Coll., Uitenhage
Voskule, J.	Marist Bros.' Coll., Uitenhage
Osborne, J.H.	Comenius Sec. S., Georgetown, B Guiana
Greenidge, H.N.	Comenius Sec. S., Georgetown, B. Guiana
Hoare, A.L.	Marist Bros.' Coll., Uitenhage
Wanigesooriye, S.L.	Lorenz Tutory, Colombo
Wilson, P.	St. Aidan's Coll., Grahamstown
Weeks, A.L.	Marist Bros.' Coll , Uitenhage
King, L.	St. Aidan's Coll., Grahamstown
Archer, J.L.	Private tuition
Pinto, C.F.X.	City Coll., Colombo

Third Class.—Honours Division.

McGregor, A.L. *e.h.a.al.gm.du.l.d.*	Marist Bros.' Coll., Uitenhage
Sülter, P.B.A. *e.al.gm.ge.l.*	Marist Bros.' Coll., Uitenhage
Phillip, H.H.A. *a.al.*	Grenada Gram. S.
Chowles, A.C. *e.al.gm.du.*	Marist Bros.' Coll., Uitenhage
Wade, F.G.W.	Grenada Gram. S.
Spence, A.B.A. *h.al.gm.f.l.*	St. Vincent Government Sec. S.
Calder, A. *l.*	Grenada Gram. S.
Sylvester, C.St.B. *h.bk.*	Private tuition
Schwartz, M. *e.h.gm.*	Marist Bros.' Coll., Johannesburg
Green, F. *e.l.*	St. Aidan's Coll., Grahamstown
Spence, A.V. *al.f.l.*	St. Vincent Government Sec. S.
Merrick, L.M. *e.*	Private tuition
Clarke, C.F.	Comenius Sec. S., Georgetown, B. Guiana
Higgs, C.C. *gm.du.*	Marist Bros.' Coll., Uitenhage
Barrett, H. *al.d.*	Conv. of the Sacred Heart, Potchefstroom
Cyrus, C.B. *a.al.*	Private tuition
Lloyd, S. *a.al.d.*	Marist Bros.' S., Cala
Palmer, A.G. *al.*	Marist Bros.' Coll., Uitenhage
Scott, J.E. *e.al.*	Private tuition
Perry, G.W.	Private tuition
Fletcher, S.K.I.F. *e.al.*	Private tuition
Gresham, E.G.	Grenada Gram. S.
Morgue, S.	Mfantsipim S., Cape Coast

Third Class.—Pass Division.

[2]Hitge, T.W.N.	Marist Bros.' Coll., Uitenhage
[2]Pearson, A.W. *bk.*	Lomas. Acad., Lomas de Zamora
[2]Brito, A.L.E.J.	City Coll., Colombo
[2]Ponnusamy, K.	Lorenz Tutory, Colombo
[2]Favard, T.	Marist Bros.' Coll., Uitenhage
[2]Ponnampalam, S.	Private tuition
[2]Silva, A.W.T.	Private tuition
[2]Keys, B.L.	Marist Bros.' Coll., Uitenhage
[2]Holmes, H.	Marist Bros.' Coll., Uitenhage
[2]Millavitia, C.E.	Private tuition
[2]Pietersz, D.L.	Lorenz Tutory, Colombo
Hurley, H.A.St.C.	Grenada Gram. S.
Innis, A. *a.*	Private tuition
[2]Francis, G.S.	Marist Bros.' Coll., Uitenhage
Pettitt, G. *al.*	Marist Bros.' High S., Port Elizabeth
Sash, M. *h.*	Marist Bros.' Coll., Johannesburg
Thomas, A.S. *h.*	Private tuition
Harrington, W. *al.*	Marist Bros.' Coll., Johannesburg
Hayes, C. *l.*	St. Aidan's Coll., Grahamstown
Merreine, I.H.	Marist Bros.' Coll., Johannesburg
Vander Hoff, E. *e.al.*	Marist Bros. 'High S., Port Elizabeth
Cox, G.W.	Private tuition
Linford, P. *a.al.*	Marist Bros.' High S., Port Elizabeth
Morkel, J.S. *e.gm.*	Marist Bros.' Coll., Johannesburg
Neptune, J.C.	Private tuition
Winter, W. *al.*	Marist Bros.' Coll., Uitenhage
[2]Clarke, R.V.	Private tuition
[2]De Silva, C.J.C.	Private tuition
Sacoe, G.A. *gm.*	Mfantsipim S., Cape Coast
Brown, H. *al.gm.*	Marist Bros.' Coll., Uitenhage
Brown, H.A.	Marist Bros.' Coll., Johannesburg
[2]Canagasabey, D.S.	Wesleyan Central S., Batticaloa
Maynard, A.E. *l.*	Comenius Sec. S., Georgetown, B. Guiana
[2]Sutherland, N.	St. Aidan's Coll., Grahamstown
Hyman, J. *e.*	Marist' Bros. High S., Port Elizabeth
Jackson, M. *du.*	Marist Bros.' Coll., Johannesburg
Noel, A.J. *bk.*	Private tuition
[2]Nesbitt, A.N.	Marist Bros.' Coll., Uitenhage
[2]Sangarapillai, S.	Wesleyan Central S., Batticaloa
Wilson, J.P. *e.*	Marist Bros.' S., Cala
Baard, D.	Marist Bros.' Coll., Johannesburg
Charles, H.	Private tuition
[2]Fitzgerald, G.W.	Marist Bros.' Coll., Uitenhage
Heard, A. *al.*	Marist Bros.' Coll., Uitenhage
[2]Norton, J.D.	Marist Bros.' Coll., Uitenhage
Selby, E.D.	Mfantsipim S., Cape Coast
[2]Wagner, J.A	Marist Bros.' Coll., Uitenhage

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BOYS, THIRD CLASS, PASS—*continued.*

Webster, S. *du.* — Sacred Heart Conv., Klerksdorp
Wilson, T. — Marist Bros.' S., Cala
Whalley, C. — Marist Bros.' Coll., Johannesburg
Armstrong, J. *a.al.* — Marist Bros.' High S., Port Elizabeth
Bowden, S. *gm.* — Marist Bros.' Coll., Uitenhage
[2]Wambeek, J. O. B. — Wesleyan Central S., Batticaloa

Bruns, F. — Marist Bros.' Coll., Johannesburg
[2]Doomson, J. A. — Mfantsipim S., Cape Coast
Milligan, J. A. — Marist Bros.' Coll., Johannesburg

Berry, A. — Marist Bros.' Coll., Johannesburg
Carter, A. — Private tuition
[2]Doranegama, W. B. — Private tuition
[2]Perera, H. V. — Lorenz Tutory, Colombo
Stewart, J. *g.* — St. Aidan's Coll., Grahamstown

Benjamin, J. — Private tuition
Binstead, F. — Marist Bros.' High S., Port Elizabeth

[2]DeSilva, G. A. P. — Private tuition
[2]Gillwald, E. — Marist Bros.' Coll., Uitenhage
Ince, F. N. — Comenius Sec. S., Georgetown, B. Guiana
Kommel, Sidney — Marist Bros.' High S., Port Elizabeth
[2]Sylvester, R. P. — Private tuition
Vaughan, A. — Marist Bros.' Coll., Uitenhage

McDonagh, J. — St. Aidan's Coll., Grahamstown
Williams, J. O. — Private tuition
Wright, H. — Marist Bros.' Coll., Johannesburg

Beckett, D. — Marist Bros.' High S., Port Elizabeth
Oondivakharvalla, A. M. — Central Coll., Colombo
Pearson, A. *al gm.* — Marist Bros.' Coll., Uitenhage
Pennacchini, L. — Marist Bros.' High S., Port Elizabeth

Cooper, A. — Marist Bros.' S, Cala
Farr, S. — St. Aidan's Coll., Grahamstown
Grey, G. — Marist Bros.' Coll., Johannesburg
[2]Heyzer, R. C. — Central Coll., Colombo
Reardon, J. — St. Aidan's Coll., Grahamstown

Carberry, J. — Private tuition
Lichtenstein, L. — Marist Bros.' Coll., Johannesburg
Odam, I. K. — Mfantsipim S., Cape Coast
[2]Sinnaturai, K. — Wesleyan Central S, Batticaloa
Tyser, H. — Marist Bros.' Coll., Johannesburg
Wade, W. — Marist Bros.' S., Cala

Adeyemi, E. — Wesleyan High S., Marina, Lagos
[2]Connor, O. — St. Aidan's Coll., Grahamstown
Miller, A. — St. Aidan's Coll., Grahamstown

Moran, M. — Marist Bros.' High S., Port Elizabeth
Veerasamy, S. *al.* — Central Coll., Colombo
Wilson, B. — Marist Bros.' S., Cala

Errecalde, M. — Lomas Acad., Lomas de Zamora
Featherstone, N. E. — Marist Bros.' Coll., Uitenhage
Kommel, Samuel, *al.* — Marist Bros.' High S., Port Elizabeth
Maturine R. J. — Private tuition

Saunders, H. — Marist Bros.' Coll., Johannesburg
[2]Weerakoon, S. G. A. — City Coll., Colombo
[2]Wijesingha, C. P. — Central Coll., Colombo
[2]Wijetunga, E. W. — Lorenz Tutory, Colombo

Brereton, V. A. — Private tuition
[2]Yates, J. — St. Aidan's Coll., Grahamstown

Allegakoen, J. E. — Wesleyan Central S., Batticaloa
Milton, R. — Marist Bros.' S., Cala

[2]Gyee, M. A. — Private tuition
Jacobs, C. — Marist Bros.' Coll., Johannesburg
Johnson, J. W. deG. — Mfantsipim S., Cape Coast
Naganathapillai, A. *al.* — Central Coll., Colombo
[2]Thurainayagam, W. D. C. — Wesleyan Central S., Batticaloa

Dowse, G. — Marist Bros.' Coll., Johannesburg
Midley, R. E. — Private tuition

Garde, N. G. T. — Marist Bros.' Coll., Uitenhage
[2]Goonewardena, A. C. — Central Coll., Colombo
White, W. — Marist Bros.' Coll., Johannesburg
Wilson, I. — Marist Bros.' Coll., Johannesburg

Cudmore, C. — Marist Bros.' High S., Port Elizabeth
Daly, C. — Marist Bros.' Coll., Johannesburg
[2]Perera, S. S. — Central Coll., Colombo
Sagoe, S. Q. — Wesleyan High S., Marina, Lagos

Ansah, W. — Mfantsipim S., Cape Coast
Cohen, B. — Marist Bros.' Coll., Johannesburg
Cole, A. C. A. — Wesleyan High S., Marina, Lagos
[2]DeMel, L. P. — Private tuition
Sutherland, D. A. — Private tuition
Thompson, J. J. — Mfantsipim S., Cape Coast
Trollip, R. H. — Marist Bros.' Coll., Uitenhage

Duncan, A. — Marist Bros.' High S., Port Elizabeth
Lawlor, P. A. — Marist Bros.' Coll., Uitenhage
McMaster, C. V. — Private tuition
[2]O'Brien, H. — St. Aidan's Coll., Grahamstown

Badoe, E. *al.* — Mfantsipim S., Cape Coast
Francois, L. E. L. — Private tuition
[2]Maharaju, R. — Wesleyan Central S., Batticaloa

Jackson, E. — Marist Bros.' Coll., Johannesburg
Tete, J. L. — Wesleyan High S., Marina, Lagos

Arnold, G. V. — Marist Bros.' Coll., Uitenhage
Darling, E. T. — City Coll., Colombo
Hammond, J. O. — Mfantsipim S., Cape Coast
Marshall, L. E. — St. Vincent Government Sec. S.
Pearson, H. — Marist Bros.' High S., Port Elizabeth
Sachs, B. — Marist Bros.' Coll., Johannesburg

Smith, D. — Marist Bros.' Coll., Johannesburg
Tesoriere, L. — Marist Bros.' High S., Port Elizabeth
Thwe, M. B. — Private tuition

Brophy, R. — Marist Bros.' Coll., Johannesburg
Jafferjee, I. — Central Coll., Colombo
McFarlane, H. G. — Marist Bros.' Coll., Johannesburg
Sawyer, E. — Marist Bros.' Coll., Johannesburg
Spencer, P. F. E. — Grammar S., New Amsterdam
Vythilingam, N. S. — Central Coll., Colombo

Calideen, S. M. — Central Coll., Colombo
Rensburg, J. — Marist Bros.' Coll., Johannesburg

Acquaah, W. D. — Mfantsipim S., Cape Coast
Fox, L. — Marist Bros.' High S., Port Elizabeth
Marcus, M. — Marist Bros.' Coll., Johannesburg
[2]Padidilian, U. V. — City Coll., Colombo

[2]Giri, J. — St. Aidan's Coll., Grahamstown
Sivambalangamuwe, M. B. — Private tuition
Wilson, J. — Mfantsipim S., Cape Coast

Higham, F. E. — Marist Bros.' Coll., Johannesburg
Wambeek, E. S. — Wesleyan Central S., Batticaloa

[2]Mendelski, M. — St. Aidan's Coll., Grahamstown
Sallieh, S. M. S. *d.* — Private tuition

Gunewardene, J. P. D. — St. Paul's Boys' S., Colombo
[2]Maung, A. G. — St. Paul's Boys' S., Colombo
[2]VanRansow, B. H. — St. Paul's Boys' S., Colombo

[2]Lawson, F. L. — Wesleyan High S., Marina, Lagos
Melville, G. B. — Gram. S., New Amsterdam
Neptune, C. — Private tuition
Daniel, W. C. — Private tuition
How, R. K. — Marist Bros.' Coll., Uitenhage
Ibrahim, A. D. *d.* — St. Paul's Boys' S., Colombo
Regis, H. — Private tuition
Williams, F. E. — Wesleyan High S., Marina, Lagos

Berriman, A. — Marist Bros.' Coll., Johannesburg
Ogoe, F. H. — Mfantsipim S., Cape Coast
Sterley, M. A. — Marist Bros.' Coll., Uitenhage

GIRLS.

FIRST CLASS [OR SENIOR].—PASS DIVISION.

Bertrand, M. *do.* — Victoria Girls' High School, St. George's, Grenada
De Gannes, I. — St. Joseph's Conv., Port of Spain, Trinidad
Kernahan, T. — St. Joseph's Conv., Port of Spain, Trinidad
Coch, A. — St. Mary's Conv., Verulam

SECOND CLASS [OR JUNIOR].—HONOURS DIVISION.

Donowa, A. *s.bk.* — Private tuition
Laffitte, G. *s.e.f.d.* — St. Joseph's Conv., Castries, St. Lucia
Knox, C. *f.* — St. Joseph's Conv., Port of Spain, Trinidad
Sellier, M. *f.* — St. Joseph's Conv., Port of Spain, Trinidad
Donowa, S. *s.f.* — Victoria Girls' High S, St. George's, Grenada
Riordan, H. *e.f.* — Conv. of the Holy Family, Johannesburg
Currie, F. *h.mu.* — Conv. of the Holy Family, Johannesburg
Taylor, J. *mu.* — Conv. of the Sacred Heart, Potchefstroom
Marquis, F. *s.* — St. Joseph's Conv., Castries, St. Lucia
Cox, E. B. *bk.* — Private tuition
DuBoulay, J. *f.* — St. Joseph's Conv., Castries, St. Lucia
Howard, H. B. — St. Cecilia's S., Allahabad
Hodges, I. A. *s.h.bk.* — St. Cecilia's S., Allahabad
Read, C. *du.mu.* — Sacred Heart Conv., Klerksdorp
Cadet, E. — St. Joseph's Conv., Castries, St. Lucia

SECOND CLASS [OR JUNIOR].—PASS DIVISION.

Turnbull, W. M. *bk.f.* — Private tuition
Kernahan, Margaret — St. Joseph's Conv., Port of Spain, Trinidad
[1]Llanos, H. — St. Joseph's Conv., Port of Spain, Trinidad
Boucaud, S. *f.* — St. Joseph's Conv., Port of Spain, Trinidad
Spinas, L. — Conv. of the Holy Family, Johannesburg
Mathews, I. P. *s.bk.* — St. Cecilia's S., Allahabad
Wells, N. L. — Victoria Girls' High S., St. George's Grenada
Alexander, E. — Victoria Girls' High S., St. George's, Grenada
Williams, E. I. *bk.* — Victoria Girls' High S., St. George's, Grenada
Hall, D. *mu.* — Conv. of the Holy Family, Johannesburg
Mackintosh, E. *f.* — St. Anne's Conv., Umzinto
Dennehy, M. *mu.* — Holy Family Conv., Parktown, Johannesburg
[1]Johnstone, E. — Holy Family Conv., Parktown, Johannesburg
Hanna, M. *du.* — Sacred Heart Conv., Klerksdorp
Bell, J. E. — Grenada High S.
Borland, A. *d.* — Conv. of the Holy Family, Johannesburg
Modeste, V. R. — Victoria Girls' High S., St. George's, Grenada
Krogh, L. *f.* — St. Joseph's Conv., Port of Spain, Trinidad
Hudson, G. H. — Mt. Edgcumbe, St. Mark's, Grenada
Goliah, F. — Private tuition
Phillips, D. — Holy Family Conv., Parktown, Johannesburg
Allen, R. — St. Anne's Conv., Umzinto
Gueydan, H. — St. Joseph's Conv., Port of Spain, Trinidad
v. Lelyveld, S. *du.* — Sacred Heart Conv, Klerksdorp
O'Reily, G. *mu.* — Holy Family Conv., Parktown, Johannesburg

THIRD CLASS.—HONOURS DIVISION.

Vogts, V. *e.mu.* — Conv. of the Sacred Heart, Potchefstroom
Modeste, H. M. *al.bk.* — Private tuition
Laffitte, A. *e.al.f.* — St. Joseph's Conv., Castries, St. Lucia
Belmar, B. *e al.f.* — St. Joseph's Conv., Castries, St. Lucia
Jackson, G. E. *e.* — Victoria Girls' High S., St. George's, Grenada
Kernahan, Mayotte *e.f.* — St. Joseph's Conv., Port of Spain, Trinidad
Abbott, E. *e.* — Conv. of the Sacred Heart, Potchefstroom
Duncan, M. — Moorhurst, Irene
Fregona, T. — St. Mary's Conv., Verulam

THIRD CLASS.—PASS DIVISION.

[2]Bell, S. U. — Grenada High S.
[2]Salmon, V. *mu.* — Sacred Heart Conv., Klerksdorp
[2]Franco, L. — Convent High S., St. George's, Grenada
[2]Pencharz, A. — Conv. of Mercy, Fordsburg, Johannesburg
Hartley, R. *e.du.* — Conv. of the Sacred Heart, Potchefstroom
Traverso, H. *f.sp.* — St. Joseph's Conv., Port of Spain, Trinidad
[2]Fletcher, W. — St. Joseph's Conv., Port of Spain, Trinidad
Traverso, G. — St. Joseph's Conv., Port of Spain, Trinidad
Monplaisir, L. *al.* — St. Joseph's Conv., Castries, St. Lucia
DuBissette, E. *a.bk.* — Convent High S., St. George's, Grenada
Crawford, I. J. *e.* — St. Cecilia's S., Allahabad
[2]Langley, C. — Conv. of the Holy Family, Johannesburg
DaCosta, E. M. *f.* — St. Cecilia's S., Allahabad
Hunt, R. *mu.* — St. Mary's Conv., Verulam
Lamy, R. *e.* — St Joseph's Conv., Port of Spain, Trinidad
Phillibert, W. E. A. — Private tuition
Fleming, A. — Moorhurst, Irene
Gomez, M. — St. Joseph's Conv., Port of Spain, Trinidad
Adams, J. — St. Mary's Conv., Verulam
[2]Canagaretnam, E. G. — Vincent S., Batticaloa
[2]Chelliah, W. A. — Vincent S., Batticaloa

Robbie, N. *e.a.* — St. Cecilia's S., Allahabad
Smart, E. G. — Conv. of the Holy Family, Johannesburg
Slade, W. *du.* — Convent of the Sacred Heart, Potchefstroom
Saunders, J. *mu.* — Conv. of Mercy, Fordsburg, Johannesburg
Gomes, R. *d.* — St. Joseph's Conv., Port of Spain, Trinidad
Rogers, L. *d.* — St. Mary's Conv., Verulam
Kernahan, M. E. — St. Joseph's Conv., Port of Spain, Trinidad
Prichard, M. — Conv. High S., St. George's, Grenada
Benjamin, G. — St. Mary's Conv., Verulam
Davis, M. H. W. *e.* — Westwood High S., Stewart Town P.O., Jamaica
Gaynor, K. M. — Westwood High S., Stewart Town P.O., Jamaica
Vogts, G. — Conv. of the Sacred Heart, Potchefstroom
Estill, G. — Conv. of the Holy Family, Johannesburg
Clarke, I. — Sacred Heart Conv., Klerksdorp
Hanson, M. — St. Joseph's Conv., Port of Spain, Trinidad
Richardson, E. — St. Mary's Conv., Verulam
Fryer, L. — Sacred Heart Conv., Klerksdorp
Moodie, C. — Moorhurst, Irene
Grantham, H. — St. Joseph's Conv., Port of Spain, Trinidad
[2]Joss, A. — Conv. of the Sacred Heart, Bulawayo
Rubinstein, F. *ge.* — Loreto H., Pretoria
D'Abadie, M. H. — St. Joseph's Conv., Port of Spain, Trinidad
Cousins, H. H. — Westwood High S., Stewart Town P.O., Jamaica
Marksman, H. — Private tuition
Monteil, V. — St. Joseph's Conv., Port of Spain, Trinidad
Williams, E. A. — Private tuition
[2]Gelman, E. — Conv. of the Sacred Heart, Bulawayo
O'Grady, K. — Holy Family Conv., Parktown, Johannesburg
Waldeck, E. — St. Mary's Conv., Verulam
McHayle, E. L. — Westwood High S., Stewart Town P.O., Jamaica
Donald, A. — Private tuition
Kuhn, M. *ge.* — Conv. of the Sacred Heart, Bulawayo
Lightening, E. — St. Mary's Conv., Verulam
Brunton, G. — Moorhurst, Irene
Thorpe, J. A. — St. Cecilia's S., Allahabad
Cohen, A. — Conv. of the Holy Family, Johannesburg
Symons, E. — Conv. of the Holy Family, Johannesburg
Buchanan, A. — Conv. of the Sacred Heart, Potchefstroom
Thompson, E. A. — Victoria Girls' High S., St. George's, Grenada
O'Connor, M. — St. Joseph's Conv., Port of Spain, Trinidad
Gradwell, M. — Conv. of the Sacred Heart, Bulawayo
Keane, T. A. C. — Private tuition
Mendies, E. C. — St. Cecilia's S., Allahabad
Simmons, M. — St. Joseph's Conv., Port of Spain, Trinidad
Wharton, V. — St. Joseph's Conv., Port of Spain, Trinidad

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LOWER FORMS EXAMINATION.—PASS LIST.

BOYS.

Abdul Azeez,S.M.	Mohamedan High S., Colombo
Almon,E.	Marist Bros.' High S., Port Elizabeth
Amm,P.	Marist Bros.' Coll., Johannesburg
Andrews,C.O.	Gram. S., New Amsterdam
Arunasalem,P.	Central Coll., Colombo
Aspeling,E.A.	Marist Bros.' High S., Port Elizabeth
Atkinson,M.	Marist Bros.' High S., Port Elizabeth
Austin,R.	Marist Bros.' Coll., Johannesburg
Baard,F.	Marist Bros.' Coll., Johannesburg
Beckles,A.J.	Comenius Sec. S., Georgetown, B. Guiana
Bell,E.	St. Aidan's Coll., Grahamstown
Bernstein,J.	Marist Bros.' Coll., Johannesburg
Best,I.	Marist Bros.' Coll., Johannesburg
Bourbon,T.	St. Aidan's Coll., Grahamstown
Busche,H.	Marist Bros.' High S., Port Elizabeth
Chung-Tiam-Fook,W.L.	Gram. S., New Amsterdam
Clarke,L.	Marist Bros.' S., Cala
Clegg,L.	Augustinian Conv., Ladysmith
Colly,A.	Marist Bros.' Coll., Johannesburg
Connel,P.	Marist Bros.' High S., Port Elizabeth
Curtis,R.	St. Aidan's Coll., Grahamstown
Curtis,S.	Marist Bros.' Coll., Johannesburg
Curtis,V.	Marist Bros.' High S., Port Elizabeth
D'Abadie,J.	St. Joseph's Conv., Port of Spain, Trinidad
Danziger,M.	Marist Bros.' Coll., Johannesburg
Develing,R.	Marist Bros.' Coll., Johannesburg
Ducie,G.	Marist Bros.' Coll., Johannesburg
Etellin,A.	Marist Bros.' Coll., Johannesburg
Faux,M.	Marist Bros.' Coll., Johannesburg
Fradgley,A.	Marist Bros.' S., Cala
Fraser,W.O.	Coburg H., New Amsterdam
Fowler,M.	Marist Bros.' High S., Port Elizabeth
Gervais,H.	Marist Bros.' High S., Port Elizabeth
Gibson,A.L.	Comenius Sec. S., Georgetown, B. Guiana
Godfrey,C.	St. Aidan's Coll., Grahamstown
Goldberg,J.	Marist Bros.' Coll., Johannesburg
Goller,V.	Marist Bros.' Coll., Johannesburg
Gordon,J.	Marist Bros.' High S., Port Elizabeth
Harrison,J.	St. Aidan's Coll., Grahamstown
Hendler,P.	Marist Bros.' Coll., Johannesburg
Herbert,L.	Marist Bros.' Coll., Johannesburg
Hills,H.	Marist Bros.' High S., Port Elizabeth
Hills,R.	Marist Bros.' High S., Port Elizabeth
Hyman,H.	Marist Bros.' Coll., Johannesburg
Ingram,G.	Marist Bros.' Coll., Johannesburg
Jack,H.	St. Aidan's Coll., Grahamstown
Jayawardana,R.H.	Central Coll., Colombo
Jones,L.	Marist Bros.' Coll., Johannesburg
Jooste,E.	Sacred Heart Conv., Klerksdorp
Karp,A.	Marist Bros.' Coll., Johannesburg
Kelly,D.	St. Aidan's Coll., Grahamstown
Kemp,B.	Marist Bros.' Coll., Johannesburg
King,R.L.	Gram. S., New Amsterdam
Knox,P.	St. Joseph's Conv., Port of Spain, Trinidad
Langton,J.	Marist Bros.' Coll., Johannesburg
Lawrence,D.	Marist Bros.' Coll., Johannesburg
Lindemann,E.	Marist Bros.' S., Cala
Lindie,W.A.	Gram. S., New Amsterdam
Lipschitz,A.	Marist Bros.' Coll., Johannesburg
Lyons,P.	Marist Bros.' Coll., Johannesburg
Mackay,D.	Marist Bros.' Coll., Johannesburg
Mamoojee,H.	Central Coll., Colombo
Marikar,M.H.L.	Central Coll., Colombo
Marks,E.	Marist Bros.' Coll., Johannesburg
Mayhew,H.	St. Aidan's Coll., Grahamstown
McGee,J.	Loreto Conv., Lydenburg
Miskin,W.	Marist Bros.' S., Cala
Mooksang,D.A.	Gram. S., New Amsterdam
Nathanson,G.	Marist Bros.' Coll., Johannesburg
Olver,A.	Marist Bros.' Coll., Johannesburg
Patoir,H.L.	Gram. S., New Amsterdam
Pearson,F.C.	Lomas Acad., Lomas de Zamora
Perera,A.L.	City Coll., Colombo
Philip,B.A.	Gram. S., New Amsterdam
Pike,H.	St. Aidan's Coll., Grahamstown
Piton,C.	St. Aidan's Coll., Grahamstown
Prior,E.	Marist Bros.' S., Cala
Robertson,F.	Gram. S., New Amsterdam
Rosenberg,I.	Marist Bros.' Coll., Johannesburg
Sanderson,G.	Marist Bros.' Coll., Johannesburg
Schlimmer,H.	Marist Bros.' Coll., Johannesburg
Scott,A.	St. Joseph's Conv., Port of Spain, Trinidad
Sherman,H.	Marist Bros.' High S., Port Elizabeth
Silverman,L.	Marist Bros.' Coll., Johannesburg
Skinner,W.	Comenius Sec. S., Georgetown, B.Guiana
Solomon,A.R.	Comenius Sec. S., Georgetown, B. Guiana
Solomon,J.	Marist Bros.' Coll., Johannesburg
Somanather,S.V.O.	Wesleyan Central S., Batticaloa
Stahl,G.	St. Aidan's Coll., Grahamstown
St.Bernard,L.F.	Grenada High S.
Suckow,W.	St. Aidan's Coll., Grahamstown
Sutton,W.	Marist Bros.' Coll., Johannesburg
Taylor,A.	Marist Bros.' Coll., Johannesburg
Turvey,L.	Marist Bros.' S., Cala
VanBuuren,C.	Marist Bros.' Coll., Johannesburg
VanRooyen,G.	Marist Bros.' S., Cala
Webb,O.	St. Aidan's Coll., Grahamstown
Wiggill,M.	Marist Bros.' S., Cala
Wilkins,F.	Marist Bros.' Coll., Johannesburg
Wilkinson,N.M.	St. Cecilia's S., Allahabad
Wilson,R.	St. Aidan's Coll., Grahamstown
Windram,R.F.	Marist Bros.' Coll., Johannesburg
Wright,J.	St. Aidan's Coll., Grahamstown
Ziegler,O.	Marist Bros.' Coll., Johannesburg

GIRLS.

Bain,U.	Grenada High S.
Baradat,C.	St. Joseph's Conv., Port of Spain, Trinidad
Bartlett,I.	Holy Family Conv., Parktown, Johannesburg
Blackbeard,D.	Sacred Heart Conv., Klerksdorp
Bolton,A.	Holy Family Conv., Parktown, Johannesburg
Borcherds,A.	Conv. of the Sacred Heart Potchefstroom
Borcherds,S.	Conv. of the Sacred Heart, Potchefstroom
Borland,A.	Conv. of the Holy Family, Johannesburg
Chientz,D.	Conv. of the Holy Family, Johannesburg
Clark,N.	Loreto House, Pretoria
Cohen,F.	Conv. of the Sacred Heart, Potchefstroom
Condon,G.	Conv. of the Holy Family, Johannesburg
Cornwall,A.D.	Grenada High S.
Crosby,D.	Holy Family Conv., Parktown, Johannesburg
D'Abadie,J.	St. Joseph's Conv., Port of Spain, Trinidad
D'Abadie,M.R.	St. Joseph's Conv., Port of Spain, Trinidad
D'Abadie,S.	St. Joseph's Conv., Port of Spain, Trinidad
deBeer,A.	Loreto Conv., Lydenburg
deBoissière,G.	St. Joseph's Conv., Port of Spain, Trinidad
deGannes,O.	St. Joseph's Conv., Port of Spain, Trinidad
deLapeyrouse,G.	St.Joseph'sConv.,Port of Spain,Trinidad
Donaldson,M.	Loreto House, Pretoria
Donelan,K.N.	Grenada High S.
Duval, M.	St. Joseph's Conv., Castries, St. Lucia
Eckstein,M.	St. Joseph's Conv., Port of Spain, Trinidad
Emery,H.M.	Loreto House, Pretoria
Fagan,C.I.	St. Cecilia's S., Allahabad
Goldberg,J.	Conv. of the Holy Family, Johannesburg
Gomez,L.	St. Joseph's Conv,, Port of Spain, Trinidad
Gomez,Maggie	St. Joseph's Conv., Port of Spain, Trinidad
Goodfellow,M.	Lomas Acad., Lomas de Zamora
Gosch,A.	St. Anne's Conv., Umzinto
Gray,V.	Loreto Conv., Lydenburg
Green,N.	Conv. of the Sacred Heart, Potchefstroom
Greening,E.	Moorhurst, Irene
Hall,L.	Moorhurst, Irene
Hall,M.	Holy Family Conv., Parktown, Johannesburg
Hansen,R.	Conv. of the Holy Family, Johannesburg
Heimann,D.	Rosslyn High S., Johannesburg
Henderson,A.	St. Joseph's Conv., Port of Spain, Trinidad
Hobson,C.	St. Joseph's Conv., Port of Spain, Trinidad
Idleson,R.	Conv. of the Holy Family, Johannesburg
Inglesby,W.	Holy Family Conv., Parktown, Johannesburg
Israel,M.	Conv. of the Holy Family, Johannesburg
Jackson,L.	Augustinian Conv., Ladysmith
Jardine,E.M.	St. Anne's Conv., Umzinto
Keegan,K.C.	St. Cecilia's S., Allahabad
Kirsten,W.	Conv. of the Sacred Heart, Potchefstroom
Kusel,I.	Conv. of the Holy Family, Johannesburg
Lapin,E.	Moorhurst, Irene
Lindenberg,C.	Sacred Heart Conv., Klerksdorp
Long,A.	St. Anne's Conv., Umzinto
Lord,D.	St. Joseph's Conv., Castries, St. Lucia
Lusted,E.	Augustinian Conv., Ladysmith
Maingot,I.	St. Joseph's Conv., Port of Spain, Trinidad
Maingot,I.M.	St. Joseph's Conv., Port of Spain, Trinidad
McLeod,J.	St. Joseph's Conv., Port of Spain, Trinidad
Medina,Maria	St. Joseph's Conv., Port of Spain, Trinidad
Medina,Micaela	St. Joseph's Conv., Port of Spain, Trinidad
Moses,A.F.	Gram. S., New Amsterdam
Moses,G.C.	Gram. S., New Amsterdam
Moskow,C.	Rossyln High S., Johannesburg
Nel,C.	Augustinian Conv., Ladysmith
Norman,M.	St. Joseph's Conv., Port of Spain, Trinidad
Ogilvie,C.L.	Grenada High S.
Peñalosa,C.	St. Joseph's Conv., Port of Spain, Trinidad
Petheram,D.	Conv., of the Sacred Heart, Potchefstroom
Plissonneau,L.	St. Joseph's Conv., Castries, St. Lucia
Quin,G.	St. Anne's Conv., Umzinto
Quinlan,A.	Loreto Conv., Lydenburg
Raine,M.	Conv. of the Holy Family, Johannesburg
Rawe,E.M.	Loreto House, Pretoria
Rawe,M.	Loreto House, Pretoria
Rawstorne,H.	Conv. of the Sacred Heart, Potchefstroom
Reis,A.	St. Joseph's Conv., Port of Spain, Trinidad
Rothschild,J.	Conv. of the Holy Family, Johannesburg
Salmon,L.	St. Joseph's Conv., Castries, St. Lucia
Salmon,T.	Sacred Heart Conv., Klerksdorp
Scallan,E.	St. Anne's Conv., Umzinto
Sellier,A.	St. Joseph's Conv., Port of Spain, Trinidad
Short,P.	St. Anne's Conv., Umzinto
Steinhobel,L.	Conv. of the Sacred Heart, Potchefstroom
Stephens,B.	Loreto Conv., Lydenburg
Tait,A.	Holy Family Conv., Parktown, Johannesburg
Tamblyn,I.	Moorhurst, Irene
Taylor,D.	Augustinian Conv., Ladysmith
Tressi,D.	Conv. of the Holy Family, Johannesburg
Vonder Bosch,B.	Augustinian Conv., Ladysmith
Watson,D.R.O.	Augustinian Conv., Ladysmith
White,L.	Moorhurst, Irene
Wickham,B.L.	Grenada High S.

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Members' Prize for Latin Essay: Percy James Price, B.A., Scholar of Trinity.—Burney Prize: J. P. S. Riddell Gibson, B.A., late Scholar of Sidney Sussex.—Thirlwall Prize: H. Mattingly, B.A., Gonville and Caius. Chancellor's Medals for Classics: F. E. Adcock, B.A., Scholar of King's, and R. Hackforth, B.A., Scholar of Trinity, equal. Honourably mentioned: W. H. Duke, B.A., Scholar of Jesus, and A. S. Farrar Gow, B.A., Scholar of Trinity.—Craven Scholarship: J. R. M. Butler, Scholar of Trinity. Honourably mentioned: G. G. Morris, Scholar of Trinity.—Isaac Newton Studentship: W. J. Harrison, B.A., Clare.—Hulsean Prize: E. C. Dewick, B.A., St. John's.—Hare Prize: W. D. P. Hill, B.A., King's, and H. G. Rawlinson, M.A., Emmanuel, equal.—Sir William Browne's Medals: Greek Ode, J. R. M. Butler, Scholar of Trinity; Latin Ode, no exercise sent in; Greek Epigram and Latin Epigram, G. G. Morris, Scholar of Trinity.

Christ's.—Calverley Prize: C. B. Coxwell and A. P. Senior, equal.

DUBLIN UNIVERSITY.—Vice-Chancellor's Prizes: Greek Prose, M. T. Smiley; Greek Verse, G. A. Small; Latin Verse, H. W. Burd, C. B. Armstrong, and H. O. Holmes; English Verse, Miss C. Mitchell.

OXFORD UNIVERSITY.—Derby Scholarship: F. A. Bertram Newman, sometime Scholar of University College.—Davis Chinese Scholarship: Kashi-Prasad Jayaswal, Jesus.—Eldon Law Scholarship: John Norman Daynes, B.A., formerly Demy of Magdalen.—Ireland and Craven Scholarships: Ireland Scholar and First Craven Scholar, R. A. Knox, Scholar of Balliol; Second Craven Scholar, E. A. Barber, Scholar of New College; Third Craven Scholar, Leslie W. Hunter, Scholar of New College; *proxime accesserunt* Edgar Lobel and Arnold J. Toynbee, Scholars of Balliol.

Brasenose.—Hulme Research Scholarship: William Moir Calder, B.A., Scholar of Christ Church. Grant of £100 for 2 years from the Hulme Fund for Research; E. L. Kennaway, B.M., formerly Scholar of New College.

Christ Church.—Official Studentship: John Murray, M.A., Lecturer of the House and Fellow of Merton. Lectureship in Modern History: Keith G. Feiling, B.A., Fellow of All Souls. Lectureship in Greek History: R. Hamilton Dundas, B.A., formerly Scholar of New College.

Exeter.—Chaplain Fellowship: Rev. N. Powell Williams, M.A., Fellow of Magdalen.

Keble.—Lectureship: Alfred E. J. Rawlinson, B.A., Corpus Christi.

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LATIN IN THE SCHOOLS.

Prof. H. A. Strong, of Liverpool University, addressed the Liverpool Branch of the Classical Association (February 1) on "The Teaching of Latin in the Light of Modern Requirements." He said there were slight indications of a dawning of conscience in the authorities of our public schools that all was not exactly as it should be in an educational Utopia. It might not be out of place to consider whether it was advisable to introduce any new methods into the teaching of our public schools and to indicate broadly what those methods should be. The older Universities did as yet—and, owing to their singular prestige, would for many years—give the cue to the chief schools of England in the matter of education. Our English public schools were the nurseries of many of our chief professional men, our statesmen, our civil servants, and of many who, in any society, whether aristocratic or democratic, were sure to make their mark and to influence society. From these public schools would not proceed the voting majority of the nation; but, as the best blood of the nation had a tendency to drift for its education into these renowned institutions, they must expect to receive the choice spirits of the nation for years to come, and their pupils might, in their turn, expect to lead their nation. The question was whether it would not be possible to render this valuable asset in our civilization still more valuable by improved methods. Were they to maintain, to abolish, or to modify their present system of classical education? Was the cry of many business men justified who proclaimed the inaptitude of public-school boys for the ordinary affairs of life, maintaining that they could not write a legible and hardly an intelligible letter, and that they could not add up a row of figures correctly? The present system of instruction did not need radically changing, but did need revising. What they had to consider was whether classics were worth retaining at all as a means of education, and how they might be best taught in consideration of the limited time which could, under present educational circumstances, be allotted them. Their answer to the first part of the question must be in the affirmative. Some part of most public-school boys' education should consist in a training in some part of classical literature. What they meant by classic was something calm, dignified, statuesque, remote from our age, but not remote from humanity in general, capable of raising admiration and interest, but not capable of exciting passionate emotion.

Proceeding to speak of the method of teaching Latin, the professor said it was his firm conviction that, if young scholars at school were taught from the beginning to read and get by heart very simple sentences and to enter into dialogues with their teacher, employing the vocabulary furnished them by these sentences, much good progress would be made. It was imperative to teach pupils who were beginning to read Latin poetry the technique of that poetry. If he were told that this was already being done in our schools, all he could reply was that the process had not yet been carried out effectually. His wish was that before the pupil came to the great study of the great classics he should have so thoroughly mastered the repellent details that he should be able to read them from the beginning with appreciation and taste. The pupil must be made to understand the difference between the language of poetry and that of prose, and what artifices of language, prompted by what feelings, go to make up a poet. Then the extreme care and precision with which each and every word in the classic was chosen, and its place allocated, should be pointed out, and the pupil himself should be encouraged to criticize what he read in this spirit. It was particularly necessary in the case of Horace and Virgil, those great masters of words, that their works should be read with the greatest care. He did not think much was to be gained by reading translations of these authors; for he had never read one of either Horace or Virgil which gave him a full idea of the musical subtlety of the one or the supreme mastery of technique to express the delicacy of thought of the other. He did not wish these treasures to be handled by the schoolboy until his mind had ripened to see their beauties. If they were to retain classics at all, let them try to teach them so that they might haunt their memories pleasantly through life and form their taste and ennoble their thoughts.

Dealing next with the subject of Latin prose writing, Prof. Strong said this was a subject that took up much of the scholars' time, and in this connexion he felt they must abate some of their pretensions. They must confine themselves mainly to teaching sentences orally, but he would supplement that by causing the pupils to write out good translations of selected pieces of Latin prose, and then, after a short interval, retranslate those into Latin, and then read again carefully the copy in the original classic author.

There was one reform in the teaching of Latin on which he wished to dwell most earnestly, because it seemed to be so unaccountably neglected. He meant the connexion between Latin, the parent language, and the Romance languages, notably French, the daughter languages. Whichever language was learnt first—Latin or French—could not fail to throw a light upon the other, and, when once the connexion between the two had been pointed out, a series of surprises was sprung upon the learner at every stage, exciting his curiosity and encouraging him to seek ever for new revelations. This point was of special importance, having regard to the fact that comparative philology would be one of the new competitors for recognition in the curricula of the future. There was no process in comparative philology which might not be illustrated by the growth of Romance. It entailed some knowledge of the languages spoken by the Latin people as contrasted with the educated classes, and this in itself was something. Of course, in the study of comparative philology the scholar would have to master the application of different laws. He would find these laws hard to master, and would meet with many apparent exceptions. Many of these exceptions could be explained; many, too, must remain unexplained.

Prof. Strong, in concluding, discouraged the use of translations, or "cribs," as they were called—at all events, in the early stages of the scholar's career. At a later stage, however, after mastering the grammar, he had much better use a translation than misunderstand his work or than fail to realize the beauties of an author through having read him scrappily. But the translation must be the best possible obtainable. He had read "cribs" which would make the learner suppose that the Latin writer must have been either an imbecile or a joker. The lecturer summed up his points as follows:—(1) to make pupils catch the spirit as well as the letter of the author whom they are to read, and to insist that it is the teacher's duty to create a Latin atmosphere round his pupil; (2) to attempt a revival of oral teaching of Latin in Latin, and of committing to memory Latin dialogues from an early age; (3) to omit much prose composition, and thus to lighten the strain; (4) to encourage the study of Latin and Romance, especially of French, as supplementary to each other. Above all, he would add that the sympathy of parents and an endeavour to make every home, however humble, a foster-mother of learning, was indispensable.

THE PRONUNCIATION OF GREEK.

Mr. S. E. Winbolt writes to the *A.M.A.*:—

The A.M.A. is to be congratulated on once more giving the head masters a lead. This time we refer to the reformed pronunciation of Greek, which has now been adopted by the A.M.A., the Preparatory Schools Association, and welcomed by the Head Masters' Association. The Conference, presumably, preferred to wait till others had spoken. On the whole, the reformed Greek follows naturally on the reformed Latin pronunciation; in the future μοῦσα will be pronounced as *musa*, and αἰθήρ as *æther*. A matter of wider importance is that, in so treating the two classical languages, we are laying the basis, so far as the relation of form to sound is concerned, for a reasonable study of modern European languages, not excluding English. Let us hear Prof. Skeat. "Probably the public is as yet unaware of the enormous advance in the scientific study of language which this apparently small revolution (*i.e.*, the reformed pronunciation of Latin) will inevitably bring about in the near future. The boy who learns Latin under this new system is actually being taught fundamental truths, such as have left their impress upon the spelling of every language that employs the Latin alphabet. The statement that the reformed pronunciation of Latin gives the true key to the pronunciation of the Roman language in early times expresses but a small portion of the truth. It is also the key to the early pronunciation and early spelling of all the other languages that employ Latin symbols, including the various branches of Teutonic and Celtic. . . . The boy who learns to pronounce Latin aright will, quite unconsciously, acquire some respect for its symbols, and will at once be put into the way of understanding the science of phonetics. He will be taught to connect sounds with invariable symbols, and this will be for him

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not merely a new conception, but will give him an important lesson that may very well serve him for his lifetime."

As to the amendments made to the Classical Association's scheme with reference to $\epsilon, \eta, \upsilon, \phi, \chi, \theta$, it was well to adopt the higher standard and put aside options which would stand in the way of uniformity. The practical difficulty lies here. The I.A.H.M. and the Preparatory Schools Association have adopted the scheme in its entirety—*i.e.*, three bodies have adopted the entire scheme, one body has amended it. Shall we be able to bring the other three over to our view, so that the Board of Education may have one definite scheme to press on "recognized" schools? This is an end much to be desired. Options in the schools mean the prolonging of Babel at the Universities. Members of the A.M.A. who teach Greek should lose no time in introducing the scheme, and I should be grateful if they would communicate to me any difficulties they find in working it, so that they may be represented to the Classical Association when (and if) it is willing to consider the matter.

PRACTICAL INSTRUCTION IN ELEMENTARY SCHOOLS.

By Sir Philip Magnus, M.P.

Introductory to the Report of a Committee on Practical Studies and a Discussion of Rural Education. Summary of a paper read before the British Association at Dublin.

A Committee was appointed at Southport in 1903 to consider the studies most suitable for elementary schools and to report generally upon the course of experimental, observational, and practical studies to be pursued in such schools. The appointment of the Committee was the outcome of a generally expressed dissatisfaction with the results of the elementary education during the preceding thirty years. It was felt that in many respects it had not succeeded to the extent anticipated in producing intelligent, capable, and resourceful citizens. Complaints came from employers in different trades, from heads of commercial firms, from officers in the navy and in the army, and from teachers in continuation, technical, and other schools into which pupils on leaving the elementary schools were admitted. The Committee nominated several sub-committees consisting of persons interested in the teaching of different groups of subjects. These sub-committees have reported from time to time.

Since the Committee was first constituted many improvements have been effected, and full recognition should be made of the high ideals set before teachers in the prefatory memoranda to the "Regulations," published by the Board of Education. Nevertheless, the true aim and purpose of elementary education do not appear to have been fully realized, and its relation to the pupils' life-work seems to have been too much neglected. The methods of teaching have been, and in many respects are still, defective, owing to the excessive reliance on book-learning and on oral instruction unaccompanied by practical and experimental work on the part of the pupils. The scheme of education is incomplete owing mainly to the want of correlation between the subjects taught and to the neglect of a much needed adaptation of the curriculum to the requirements of actual life. Subjects of the highest importance have been regarded as extras outside the ordinary curriculum, and the larger part of the school lessons have failed to stimulate observation, to encourage initiative, and to create those habits of self-reliance which are essential to success in the workshop, the field, or the counting house, or in the discharge of domestic duties.

A Report of the Committee was presented to the Section at the York meeting in 1906, and contained appendices dealing with the practical teaching of arithmetic and mensuration, Nature study and domestic subjects. The Presidential address at Leicester dealt in part with kindred subjects. In the teaching of science a remarkable improvement has been already shown, due very largely to the efforts of Prof. Armstrong, and advances have been made in manual instruction and in other branches of practical study very largely through the efforts of other members of the Committee.

The Report on science teaching to be presented this year and the discussion on Rural Education are further contributions to the solution of the problem referred to the Committee. The problem is one of the highest importance, whether considered from an economic or a national standpoint. For its satisfactory and complete solution further experiments in teaching are needed, and help must be obtained from the central as well as from Local Education Authorities. Moreover it is essential that teachers should be so trained as to be able to give instruction in accordance with the principles recommended by the Committee in their reports. It is hoped that the efforts of the Committee and of its individual members, will result in the introduction into our elementary schools of a revised curriculum based on practical studies.

REVIEWS.

A Curriculum Survey.

The Primary Curriculum. By F. H. Hayward. (4s. net. Ralph, Holland, & Co.)

This forms the second volume of the "Educational Science Series" being issued by Dr. Hayward, the first being "The Meaning of Education as Interpreted by Herbart." One is therefore prepared to find in the present book a general treatment of the question of curriculum on Herbartian lines. On examination, however, we find the book to belong rather to the class represented by Prof. Adamson's "Practice of Instruction" and Prof. Welton's "Principles of Teaching." Like those two works, it is not exclusively written by the editor. Even the elementary-school curriculum can no longer be treated effectively by any one person; so Dr. Hayward has obtained the co-operation of a number of specially qualified teachers, who deal with such subjects as drawing, needlework, music, manual training, natural science, mathematics. The editor lays considerable stress on the fact that his helpers are practical teachers: "They are not academic specialists whose pronouncements, even though educationally sound, suffer from lack of contact with the difficulties of the classroom."

The book appeals to two sets of readers—to students in training and to teachers in actual practice. At first sight it would appear to be impossible to meet the needs of both classes, but a careful examination of the book shows that the editor has so presented his subject as to justify his claim to be useful to both the experienced and the inexperienced teacher. As a matter of fact, the great complaint against the ordinary text-book for the training college student is that it is too theoretical, and that when its reader comes out into what is called real life he will find that he has to change a great many of his practices, if not his opinions. In this work we have no lack of theory, but it is kept in such close touch with actual practice that there is little danger of the reader losing consciousness in the too attenuated atmosphere of the abstract. It is true that the book is argumentative—it could not well be otherwise, coming as it does from a recognized advocate of the newer methods—but the matters in debate are things that are of everyday interest and practical importance. Further, we find that both in the case of the editor and his contributors there is an absence of dogmatism that is very refreshing. A new method is not pressed forward merely because it is new, and the editor is not at all unwilling to go back upon previous utterances if he sees reason to change his attitude towards a method. His treatment of Miss Nellie Dale's method of teaching reading is a case in point. The same reasonableness is shown by Mr. Madams in his treatment of the basic models in the teaching of drawing. Like all intelligent teachers, Mr. Madams objects to the abstract way in which these models were formerly used, but this does not blind him to the fact that they have a place in the rational drawing course. So with the heuristic method: the editor is strongly sympathetic with the views of those who support this method, but he is fully alive to its dangers, and takes occasion to point out that both on the moral and on the material side its advocates expect too much from it.

In reading the book one experiences an almost irritating alternation between a feeling of homogeneity and a feeling of heterogeneity. This may, perhaps, be accounted for by the fact that the work is based upon a definite theory. However diverse the subjects of discourse, there is an underlying principle common to them all. This cannot be said for most books that deal with these subjects. On the other hand, the illustrations are so rich and varied that one is continually being diverted from the main line of thought and drawn into apparently irrelevant side issues, only to be suddenly confronted by another aspect of the general principle of apperception that permeates the whole. The range of illustration is enormous, stretching from the fact "that modern music-hall singers have almost abandoned the practice of following a set tune," through the "Biglow Papers," up to the "matchless story of Isaiah."

As to the actual curriculum dealt with, there are certain points

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of originality. Most text-books omit all reference to the teaching of religion and the Bible. Prof. Adamson has incorporated in his "Practice" a chapter on this subject dealt with from the Church standpoint. In the present work we have the matter treated mainly from the cultural point of view. It is hard to imagine how any one—Churchman or Nonconformist—could object to the teaching set forth in this chapter. Civic Instruction gets a chapter to itself, and one can conceive even Mr. Graham Wallas (who bemoans his sad fate in having had to read all the dull text-books on this subject) brightening up under Dr. Hayward's inspiration. Mr. Gould's chapter on Moral Instruction is clear and pointed, but will not make much impression on those who have the usual rooted prejudice against direct moral instruction. In the important section on English Literature we have a very able presentation of the possibilities of this subject in the elementary school. Here Dr. Hayward is very much at home. We find the practical teacher showing himself in every paragraph. He is particularly useful in the section on Recitation. Quite a swarm of tough old schoolroom idols suffer severely at his hands, as he, no doubt, has often suffered at theirs in his professional visits as inspector. In this section great stress is laid on the problem method, and several excellent examples are given. In dealing with Wordsworth's "One impulse from a vernal wood," Dr. Hayward seems to make less allowance for the poetical fancy than one would expect from him.

The chapter on History is particularly strong. What is specially admirable about it is that the writer never forgets that he is dealing with a subject to be presented to pupils at an elementary school. Would that more examiners wrote sentences like these: "The teacher may *teach*, or at least refer to, many facts which may not be made the themes of examination questions. Until this distinction is recognized by head and assistant teachers, history cannot be taught with much intelligence." When we come to the chapter on Geography we get a great many useful suggestions; but at this stage we begin to feel that within the scope of a chapter it is impossible to do anything like justice to subjects on which whole books are now written, and written from the teacher's standpoint. The chapter on Needlework in this book, for example, can be by itself of little use to the practical teacher. She must turn to some of the classical books on the subject—Miss Amy K. Smith's, Miss Walker's, or Miss Rosevear's. Yet even here there is some excellent, if controversial, matter that is not to be found in any of the books referred to. As a matter of fact, Dr. Hayward is keenly alive to the need for further reading on the various subjects he treats, and to this end he supplies a very useful bibliography on most of the subjects. There is certainly a place for just the sort of book that Dr. Hayward has written. We are probably at this moment at the beginning of a movement towards specializing in the teaching of our elementary schools, but in no case can this specialization go far. It is coming to be recognized that about a third of the whole school time is about the most that can be put at the disposal of specialists; the rest of the time ought to be in the hands of the class teacher, who is responsible for the education, as well as for the instruction, of the pupils. This being so, every teacher who proposes to teach in an elementary school ought to have a general knowledge of the methods of teaching all the subjects of the curriculum. Even if the teacher does not in future have to teach all the branches of the curriculum, he will teach the branches that are allocated to him all the better because he knows something about the others. All teachers may not be qualified to teach singing, for example, but every teacher will be the better for reading chapter ix. in this volume. There Mr. T. W. Greenstreet gives us his views on "Songs as Knowledge-links." The matter might be better arranged for the special needs of the teacher, but in itself it is extremely interesting and presents a new point of view to the teacher. The same may be said about the little section that Dr. Hayward writes on Logic in the elementary school. Naturally, he does not recommend anything but a few explanations of common terms, and in particular some references to the commoner fallacies. It has been long customary to call grammar "the logic of the elementary school." As a matter of fact, there are many points in school grammar that are more abstruse than many of the simpler parts of logic.

Dr. Hayward ends with "A Dogma and a Dream." The dogma is his old enemy, formal education, whose defenders, by the by, are singularly modest of late; the dream is the open-air school, in which the very words "atmosphere" and "right of entry" will sound strange. If this dream comes true, the curriculum will simplify itself, and all our troubles will come to a natural end. In any case, Dr. Hayward is prepared to have all his work done over again in twenty years. In the meantime he may congratulate himself on having done a capital bit of work, full of interest and suggestion. No one can read his book and remain content with "contemporary practice." To the student in training it will be an inspiration.

How to Teach Arithmetic.

Special Method in Arithmetic. By Charles A. McMurry, Ph.D. (3s. net. Macmillan.)

Although the present volume has taken a comparatively long time on its way to this country, other volumes of the series to which it belongs—all on educational method, and all from the pen of the same author—are already well known here. The manual addresses itself as well to teachers as to students about to enter the teaching profession, and deals with arithmetic in its relation to the work of schools corresponding to the elementary school of various grades as it exists in America. Among the works most often quoted by the writer in support of his own views are "The Teaching of Elementary Mathematics," by Prof. D. E. Smith, and "The Psychology of Number," by McLellan and Dewey.

Commencing with a brief historical survey of the teaching of arithmetic in the past, and touching on the progress effected by Trapp, Pestalozzi, Grube, and others, prior to whose day the imparting of the elements of the subject was eminently dull and formal, the author proceeds to enumerate the ideas held by some of the deeper thinkers at the present time—ideas that may be summed up in the statement that arithmetic in the elementary school may in reality be more effectively taught than it has hitherto been, yet not engross so many hours as it has been customary to assign to it. It has been wont to form a primary object of attention—(1) because a knowledge of arithmetical processes is necessary to the proper conduct of the business of life; and (2) because the study of arithmetic has at least had the reputation of being especially valuable as a mental discipline. But it is now argued by many authorities on education that for practical purposes a number of the arithmetical processes are not required by the average citizen, and that the knowledge of them is therefore necessary for those only who devote themselves to the study of arithmetical science for its own sake.

Further, they hold that, in the education of the future citizen in general, the proper province of arithmetic is to help to a true estimate of the world as a whole in its quantitive aspect, just as any other subject assists in the formation of an accurate estimate of it in some other relation, and hence that each branch of study in turn is an equally important factor in a school course based on a universal inductive-deductive method of instruction, and that no one subject must unduly encroach on the time available for the entire education of the individual. The fundamental principles which, in the author's opinion, govern the ideal study of number are laid down by him in vigorous terms and appeal strongly to his readers, although the repetition of some of his arguments (due, perhaps, to the free quotation of similar views as expressed by others) becomes at times rather tedious. The leading principles to which we allude are, broadly speaking, the following. Every process should really be taught in three stages: (1) through the medium of suitable natural objects and the common experience of the children; (2) by means of symbols that provide for the transition from concrete ideas to pure abstractions: (3) by the application of the number abstractions, when formed, to concrete problems bearing on topics that enter into the life-history of the individual, the State, and the world in general.

Again, the objects of number study should be not units of fixed size, with regard to which the teaching is entirely synthetic, but vague quantities, to be first analysed and then subjected to the process of combination of their constituent parts. And, once more, the relation of every fresh subject of investigation to the sum of the knowledge previously acquired should be constantly indicated and insisted upon. To the methods adapted to the ideal instruction and to illustrative lessons in arithmetic the greater portion of the work is devoted, and the text cannot be read otherwise than with the greatest interest and benefit by present and future teachers, seeing that it is full of valuable information and suggestions for their guidance. The chapters on these topics are supplemented by a useful one dealing with the works bearing on the teaching of arithmetic. The whole treatise constitutes an excellent contribution to the library of books on education.

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GENERAL NOTICES.

MATHEMATICS.

(1) *A Complete Arithmetic.* By M. Eastwood, B.Sc., and J. Lightfoot, D.Sc., M.A. (4s. net.) (2) *Short Methods in Arithmetic.* By the same authors. (1s. 3d. net. Ralph, Holland & Co.)

These volumes are not for the actual beginner, but for the student already well grounded in the elements of the subject and desirous of following a course of theory as well as of practice. The second, and by far the smaller book, consists chiefly of excerpts from the "Complete Arithmetic," and includes brief explanations of and numerous exercises on methods that may be employed with practical advantage from the point of view of economy both in labour and time. The "Complete Arithmetic" itself must be regarded as an important accession to the number of standard works on the subject. With respect to the arrangement of the contents, it may be said that the authors, in planning the volume, have allowed themselves to be influenced specially by a desire to develop the theory, so that the course followed by the reader may provide for him a training in sound and accurate reasoning, in addition to giving him a knowledge of the subject itself. For example, we find decimals introduced from the first in close connexion with integers, and thus made to take up their natural position as a part of our general number system. The student is from the outset rendered familiar with the nature and value of the methods of approximate calculation, and the distinction is drawn between results which admit of being carried to a greater degree of accuracy than that actually obtained and those which from the very nature of the given facts must always retain a merely approximate character. Not the least interesting feature of the text-book is the brief historical survey of the subject with which the work opens. It contains, perhaps, nothing that we have not previously met with again and again, but the facts are put together in a manner that is fresh and attractive.

(1) *Trigonometry.* By R. C. Bridgett, M.A., B.Sc., F.C.S., and William Hyslop, M.A., B.Sc. (4s. 6d.) (2) *Experimental Trigonometry.* By R. C. Bridgett, M.A., B.Sc., F.C.S. (1s. Blackie.)

The two text-books together form a valuable and interesting course in the subject and are modern both in scope and conception. As might be anticipated, the earlier chapters of the first-named and more advanced of the two volumes and the text of the latter small preliminary treatise present many points of close resemblance. Amongst them may be noticed a simple and at the same time apt device intended to assist the mind in recalling the chief relations between the trigonometrical functions of any angle. The diagram employed for the required purpose appears to be original: certainly it does not usually find place in the elementary class-book on trigonometry. Prominence is assigned in both works to the practical utility of a study of trigonometry, and a characteristic feature is the setting of problems to be solved both by drawing and by theoretical processes of calculation. The object the writers desire to attain by these means is made evident through the medium of their excellent advice that students should be required to compare the results arrived at by the different methods and to compute the percentage errors due to want of accuracy in their measured constructions. They may thus be led to cultivate a feeling for the value of correct drawing. Large and varied collections of exercises, examination papers, and miscellaneous problems offer the usual facilities for the acquirement of skill in applying the principles of the subject. A long list of formulæ is placed at the opening of the advanced text-book, and in both volumes, in appendix form, the authors have reproduced suitable four-figure tables, those in the larger work including tables of logarithms, antilogarithms, natural and logarithmic sines, tangents, &c. Type, paper, and, as a general rule, the diagrams are very satisfactory.

MODERN LANGUAGES.

Le Médecin de Campagne. By Honoré de Balzac. Edited by de V. Payen-Payne. (3s. Cambridge University Press.)

The introduction gives a sketch of the life of Balzac and comments instructively upon the book in hand. "Judged as a novel," says Mr. Payen-Payne, "one might say it was a bad one, for there is hardly any action at all; but it is better than a novel—it is a magnificent study of applied sociology." Balzac himself said: "C'est l'Evangile en action." Sir Leslie Stephen found it "as dismal as a gigantic religious tract." We have no doubt it will be read with interest by all pupils worth their salt. The length of the story leaves little space for notes, but such as are given will be helpful in need.

Chatterton. By Alfred de Vigny. Edited by E. Lauvrière, Docteur ès Lettres, Professeur Agrégé au Lycée Louis le Grand, Paris, Lauréat de l'Académie Française et de l'Académie de Médecine. (3s. net. Clarendon Press.)

The introduction, which is written in French, deals at considerable length—nearly a hundred pages—with the life and work of Alfred de Vigny. "Le Chatterton de Vigny," says Dr. Lauvrière, "n'a, en effet, rien de commun avec l'actif, rusé, érotique petit poète faussaire de Bristol que révélait déjà la critique contemporaine: il n'est que le symbole romantique du noble et malheureux fils de 'cette fée malfaisante qu'on appelle Poésie.'" Various supplementary fragments on Chatterton and his writings are also given. The notes are partly biographical, partly explanatory, and will be very serviceable.

Cambriole, by Pierre Maël (6 fr., Hachette), is a laggard from Christmas, but it will be equally entertaining at any other season. Like half a score of M. Maël's other works, it belongs to the "Nouvelle Collection pour la Jeunesse." The story is developed most interestingly and it is charmingly written. There are forty-eight illustrations by Zier. A delightful and handsome volume.

Two volumes of the agreeable "Petite Bibliothèque de la Famille" (5 fr. each, Hachette) are also rather late for the New Year, but they are none the less welcome: (1) *Le Voleur*, by Charles Géniaux, with illustrations after De Casimacher; and (2) *Le Trèfle Rouge*, to which is appended *Le Secret du Capitaine*, by Norbert Silvestre, with fourteen illustrations after R. Wallace. The form is very handy and the get-up artistic. The scene of *Le Trèfle Rouge* is laid in London, with English and Irish characters, and there is no lack of humorous situations.

HISTORY AND GEOGRAPHY.

William the Conqueror and the Rule of the Normans. By Frank M. Stenton, M.A., late Scholar of Keble College, Oxford. (5s. Putnam.)

We regard this volume as one of the ablest contributions to the long and capable series of "Heroes of the Nations." Mr. Stenton has patiently studied his subject in its complete setting—English and Norman—and he handles it with a firm grip throughout. An extensive introduction explains luminously the position of the country before the advent of William, tracing the causes that rendered it a comparatively easy prey to his attack. "The continuance of the independent life of England had already, in 1000, become, if not an impossibility, at least a very remote contingency"; while in 1065 "all the symptoms of political disorganization—the independence of the great earls, the importance of the executive, the fatuity of the royal counsellors, the personal weakness of the king—are illustrated by the narrative of Tostig's expulsion." A separate chapter is devoted to the problem of the English succession. The narrative is lucid, though the style is rather plain and heavy. Even in describing the battle of Hastings, Mr. Stenton abstains, apparently of set purpose, from any pointed, not to say picturesque, effects: we are glad to see that he relegates the "palisade" to a foot-note and repudiates it—perhaps in another generation it will have disappeared from the text-books. The last three chapters—on William's dealings with the Church, on the Administration, and on Domesday Book—treat their important subjects with marked ability and discrimination. There are twenty-two illustrations of great interest, thirteen reproductions of coins, eight genealogical table, and seven maps.

Handbook of Commercial Geography. By Geo G. Chisholm, M.A., B.Sc. Edin., Lecturer in Geography in the University of Edinburgh. Seventh Edition. (15s. net. Longmans.)

That a book of such extent and cost should have run rapidly into a seventh edition is speaking testimony to its value. The contents have been steadily and carefully kept up to date; and now a very important and opportune chapter has been added on Trade Routes, with three elaborate maps showing express and transcontinental railway routes in Europe, Eurasia, and North America (all specially prepared for this edition), and an ocean traffic map in a pocket. A large mass of useful statistics is gathered in an appendix, and there is a full index. A thoroughly well informed, lucidly ordered, and comprehensive work.

(1) *The "Britannic" Historical Geography.* Part I., *To the Wars of the Roses.* (3d. net.) (2) *The "Suggestions" Historical Drawing Cards.* Sets A, B, C, and D. All by W. H. Donald. (1s. 6d. each set.) (Charles & Dible.)

(1) is "a history, geography, and mapping book." The maps and plans of famous battles are boldly outlined and not overloaded with names; and the letterpress on the opposite pages groups distinctly the events of greater importance. The book should be a very helpful companion to the detailed history. The Drawing Cards are disposed in sets of 24 each, illustrating the military, ecclesiastical, and especially the social and domestic, aspects of society. They are extremely well done, and cannot fail to be most serviceable in bringing home to the minds of the pupils a more definite and clear idea of the sort of world the people of their history book lived in. Set A illustrates the ancient Britons, the Romans, the Danes or Vikings, and the Anglo-Saxons; Set B, the Normans, Plantagenets, and Tudors; Set C, the Tudors, Stuarts, and Hanoverians; Set D, the Church, military weapons and armour, domestic utensils, and furniture. The idea is excellent, and it is efficiently executed.

RELIGIOUS AND MORAL.

Dictionary of the Bible. Edited by James Hastings, D.D., with the co-operation of John A. Selbie, D.D., and with the assistance of John C. Lambert, D.D., and of Shailer Mathews, D.D., Professor of Theology and Dean of the Divinity School in the University of Chicago. (20s. net. T. & T. Clark.)

Though Dr. Hastings has already edited a well known work on the same subject in five volumes, and has had the assistance of some of his former colleagues, the present dictionary is a wholly new and original work, and contributors to the larger undertaking have been put on to

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different subjects from those they then dealt with. Moreover, every writer signs his articles. It is certainly a great achievement to have brought together into a single volume of a thousand double-column pages the substance of the average scholarship of the day upon so many, so varied, and often so strenuously contested matters. We follow the editor in saying the "average" scholarship of the day, and his main reason for the limitation is "the impossibility of getting the whole of the work done satisfactorily by either very advanced or very conservative scholars." An account is given of the whole of the contents of the Bible: and it has required exceptional discretion and firmness to keep the various articles to their just proportions. The volume will be most valuable, not only to the clergy, but also to the intelligent and inquiring laity, and will be greatly effective for the dissemination of fuller and more accurate knowledge of the Bible. There are four useful maps.

The Hebrew Prophets for English Readers. Edited by Francis H. Woods, B.D., sometime Fellow and Theological Lecturer of St. John's College, Oxford, Rector of Bainton, and Francis E. Powell, M.A., Vicar of Newerby and Grindale. In 4 volumes. Vol. I.: *Amos, Hosea, Isaiah* (1–39), *and Micah.* (2s. 6d. net. Clarendon Press.)

The texts are given "in the language of the Revised Version of the English Bible, printed in their poetical form, with headings and brief annotation." A considerable general introduction discusses under seven principal heads the origin, status, and "schools" of the prophets, the nature of the prophetic gift, the moral limitations of early prophecy, the literary prophets (with the classification, characteristics, &c., of the prophetic books), the predictive power of the prophets, and the relation of prophecy to Christ and Christianity. Each prophetic Book is furnished with a special introduction. The form of presentation will certainly enable the general reader to study the prophetic literature more intelligently and to feel its power more effectively.

Messrs. Chatto & Windus issue a generous edition of *The Imitation of Christ*, by Thomas à Kempis, handsome enough for a Christmas or New Year gift (7s. 6d. net). The text is the translation by Richard Whytford (1556) as re-edited into modern English (with an historical introduction) by Dom Wilfrid Raynal (1872). "None of the many translations published since Whytford's day," says Dom Raynal, "have rendered so forcibly, and yet with such sweet simplicity, the spiritual teaching of the *Imitatio Christi.*" The volume is effectively illustrated in four colours and in line by W. Russell Flint, and the binding is adapted from a fine example of the German style, dated Basel 1475.

The Oxford Hymn Book (3s. 6d. net, Clarendon Press) has been compiled by a committee of Oxford Doctors of Divinity, with expert assistance. It emerges as an expanded edition of the hymn-book used in the University Church. The qualities aimed at most are "simplicity, directness, and genuineness of religious feeling": the choice "has gravitated towards what may be called the Old Masters—Watts, the Wesleys, Doddridge, Cowper, Newton." The selection of tunes has been guided by somewhat similar principles; and the music type is a new fount, specially cast for the book. The hymns number 350. The selection has been most carefully and successfully made. The work is published in various forms, with or without the music.

BOOK-KEEPING AND PRÉCIS.

The A B C of Bookkeeping. By Lawrence R. Dicksee, M.Com., F.C.A., Lecturer at the London School of Economics and Political Science, formerly Professor of Accounting at the University of Birmingham. 2s. Longmans.

Mr. Dicksee has strong views in favour of the educational value of book-keeping, rating it as "at least equal to that of (say) geometry." Here he essays "to map out a course of instruction which, it is of real educational value as a course of mental gymnastics, will equally be found to be of some utility in the larger field of business life." Undoubtedly the volume will serve both ends very substantially. But the author "has not been so very much concerned with the more utilitarian aspect of the matter," his opinion being "that, if a boy's mind has been well trained in school, he should (under favourable circumstances) experience no difficulty later on in rapidly adapting himself to his environment, whatever it may be." In any case, the work is admirably executed.

Book-keeping for Beginners. By Beatrice Brackenbury, Teacher of Book-keeping at the South-Western Polytechnic, Chelsea, &c. 1s. 6d. Longmans.

Wisely assuming that the student is absolutely ignorant of the subject, the writer sets forth the rudiments in the simplest and clearest manner, showing by good examples, step by step, how each transaction is dealt with, and why it is so dealt with. Many varied exercises are inserted, and some typical examination papers are appended. The volume will be extremely useful for beginners.

The Student's Complete Commercial Book-keeping, "comprising the principles and practice of Double Entry as applied to modern business, and including a course of training for all examinations," by Arthur Fieldhouse, F.I.P.S., Commercial Lecturer at the Technical College, Huddersfield (4s., Leeds: Bean; London: Simpkin, Marshall, & Co.), has reached a twelfth edition. It is revised to date and considerably enlarged. The scope is comprehensive and the treatment is practical and lucid. The enormous popularity of the book speaks for its value to students.

The Practical Précis Book. By W. Cosmo Monkhouse, of the Board of Trade. (Omega Press.)

The alternative title—"Lessons in accuracy of statement and preciseness of expression for Civil Service students, London Matriculation, self-education, and use in Schools"—indicates the scope of this useful little book. It may appear that the author has gone far beyond the usual scope of Précis, but it is only too likely that his excursions into the teaching of English are justified by the attainments of not a few candidates. The directions are very judicious, and the examples are varied and well chosen.

ART.

The *Transactions* of the Third International Art Congress for the Development of Drawing and Art Teaching and their Application to Industries (1908), edited by C. Myles Mathews, form a considerable volume of some 600 pages (6s.: offices of the Congress, 157 Cannon Street, E.C.). The subjects are most varied, fairly covering the range of the subject, and they are treated very competently.—In connexion with this issue, we may note that two other works have been published, each compiled expressly with a view to the Congress, and each giving an account of the present state of the teaching of drawing in the country it deals with: "Deutsche Kunsterziehung," by Prof. Behrens, and "Art Education in the Public Schools of the United States," edited by Dr. James Parton Haney.

The Art Workers' Quarterly publishes a second special number (1s. net)—the first was published in August last—making a more comprehensive record of the Retrospective Exhibition of Students' Works held in the Galleries of the Victoria and Albert Museum. The number includes also papers and extracts of papers read at the International Art Congress by a number of well known artists and art critics. The matter is fresh and valuable, and the illustrations are abundant and excellent.

"WHO'S WHO."

(1) *Who's Who*, 1909. (10s. net.) (2) *Who's Who Year-Book*, 1909. (1s. net.) (3) *The Writers' and Artists' Year-Book*, 1909. (1s. net. A. & C. Black.)

(1) "Who's Who" has constituted itself indispensable. It has now run a long way over 2,000 double-column pages, and it contains some 23,000 biographies, every one of which has been submitted for personal revision. The book is simply invaluable to all that require to make reference for biographical facts relating to men and women of the time. —(2) The "Year-Book" is made up of the tables that used to be a valuable feature of "Who's Who" itself, but which are now more conveniently grouped apart—lists of the Royal family, of members of Parliament, of Government officials, the judiciary, the press, societies, &c. New features are steadily requiring an extension of space. The volume is most useful for ready reference.—(3) is "a directory for writers, artists, and photographers." If you want to place stories or articles, here is a long list of British and American journals and magazines, with notes of their characteristics; if you want to publish a book, here is a list of publishers to choose from. Then there are literary agents, art agents, press cutting agencies, and so forth. A very serviceable book.

MISCELLANEOUS.

Messrs. J. M. Dent & Co. have commenced the issue of a spacious volume, *Trees and Shrubs of the British Isles, Native and Acclimatized*, by C. S. Cooper, F.R.H.S., and W. Percival Westell, F.L.S., in sixteen Parts (1s. net each). There will be sixteen full-page coloured plates, and seventy full-page black-and-white plates, drawn direct from Nature by C. F. Newall. The first Part shows that the work will be thoroughly well executed and handsomely produced.

Messrs. Cassell have commenced to issue a new edition of their excellent *Encyclopædic Dictionary and Atlas* in weekly Parts (7d. net each). It consists of three portions: (1) the original seven-volume work, thoroughly revised and corrected; (2) a supplementary volume, giving words brought into use since the original work was published; and (3) an Atlas and a full index. The serial contains over 6,000 pages, 3,000 black-and-white drawings, 76 coloured plates, and (in the Atlas) 88 coloured maps drawn exclusively for the work.

The Leadenhall Press (50 Leadenhall Street, E.C.) has produced a "Stickphast Cement," which "will unite fractured china so that it will not break again in the same place, and will stand boiling in water 48 hours." This should be a useful household article.

We are glad to observe that the *Revista Pedagogica*, which is published monthly at Rome under the auspices of the Associazione Nazionale per gli Studi Pedagogici (2 lire; 12·50 lire per annum), is maintaining its high quality and wide range. The January number contains (among other able articles) a very interesting account of the pedagogical courses at Jena in the summer holidays last year. "Chi avrebbe detto al Prof. Rein nel 1889 che i suoi 25 studenti sarebbero giunti al numero di 632, e che i 14 professori che gli furono colleghi nei primi anni sarebbero quest' anno giunti al numero di 48?"

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OXFORD UNIVERSITY PRESS.

INCLUDED IN THE "SCHOOL WORLD'S" LIST OF "MOST NOTABLE SCHOOL BOOKS OF 1908."

THE KING'S ENGLISH.
Abridged Edition. By H. W. F. and F. G. F. 1s. 6d. Complete Edition, 5s. net.

SOUNDS OF ENGLISH. By H. SWEET. 2s. 6d.

WRITING OF ENGLISH.
By PHILIP J. HARTOG, with the assistance of Mrs. A. H. LANGDON. Second Edition. 2s. 6d.

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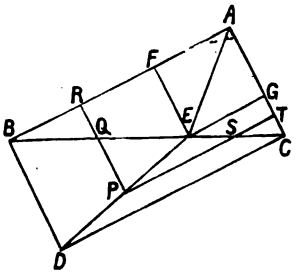
MATHEMATICS.

16562. (Henry B. Woodall.)—Find the locus of the point such that, if lines are drawn through it parallel to two sides of a triangle, the triangle shall make equal intercepts on those lines.

Solution by James Blaikie, M.A.



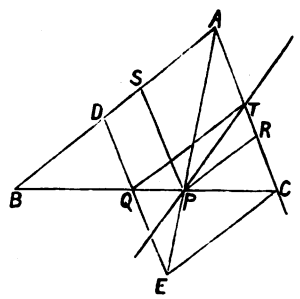
Let ABC be the triangle. Complete the parallelogram ABDC, and let the bisector of LA meet BC in E. Thus ED and the two corresponding lines are the locus required. For, let P be any point in DE or DE produced; draw PQR, PST parallel to AC, AB. Also draw EF, EG parallel to AC, AB.

$$QR/EF = QB/EB = PD/ED = SC/EC = ST/EG.$$

But $EF = EG$;

therefore $QR = ST$.

Mr. Henry Riddell, M.E., solves as follows the more general problem of which the one in the Question is a special case:—



This problem is quite as easily solved in the more general form giving the intercepts any given ratio when drawn parallel to any two given lines. In the proof the lines will be parallel to the two sides; but if P is found, which can easily be done for any directions, the proof will be manifest from what follows.

Cut off AD, so that AC/AD equals the given ratio of intercepts parallel respectively to AC and AB. Complete the parallelogram ADEC, and the diagonal cuts BC in P, a point on the locus. From Q, the point of intersection of DE and BC, draw QT parallel to AB; then is T another point on the locus. We have BP/PC = CP/CQ, and hence BP/CP = PC/PQ, and if any other pair of feet of corresponding intercepts are C′ and Q′, we have similarly BP/CP = PC′/PQ′, and always PC′/PQ′ is constant, and the intersection of lines through C′ and Q′ parallel to fixed directions is a line through P, in this case PT.

16463. (Professor Langhorne Orchard, M.A., B.Sc.)—Show that

$1^4-1^4+4^4-3^4+\ldots$, to $2n$ terms $+ 2(2^2-1^2+4^2-3^2+\ldots$, to $2n$ terms$)$
$= 2(1^3+2^3+3^3+4^3+\ldots$, to $2n$ terms$) + (1+2+3+4+\ldots$, to $2n$ terms$)$.

Solutions (I.) *by* D. P. Varadarajan, B.A.; (II.) *by* C. M. Ross, *and others*; (III.) *by* M. Satyanarayana, M.A.

(I.)

$$(2^4-1^4+4^4-3^4+\ldots\text{to } 2n \text{ terms}) + 2(2^2-1^2+4^2-3^2+\ldots, \text{to } 2n \text{ terms})$$
$$-2(1^3+2^3+3^3+\ldots, \text{to } 2n \text{ terms}) - (1+2+3+4+\ldots, \text{to } 2n \text{ terms})$$
$$= \sum_{p=1}^{p=n}\left[\{(2p)^4-2(2p)^3+2(2p)^2-(2p)\}-\{(2p-1)^4+2(2p-1)^3+2(2p-1)^2+(2p-1)\}\right]$$
$$= \sum_{p=1}^{p=n}\{2p(2p-1)(4p^2-2p+1)-2p(2p-1)(4p^2-2p+1)\} = 0;$$

therefore

$$1^4-1^4+4^4-3^4+\ldots+2(2^2-1^2+4^2-3^2+\ldots, \text{to } 2n \text{ terms})$$
$$= 2(1^3+2^3+3^3+\ldots, \text{to } 2n \text{ terms}) + (1+2+3+\ldots, \text{to } 2n \text{ terms}).$$

(II.) The series $1^4-1^4+4^4-3^4+\ldots$, $2n$ terms may be written $(2^4-1^4)+(4^4-3^4)+\ldots$, n terms. The nth term is

$$(2n)^4-(2n-1)^4 = 32n^3-24n^2+8n-1.$$

Hence $S_n = 8n^2(n+1)^2-4n(n+1)(2n+1)+4n(n+1)-n$ ..... (1).

Similarly, the sum of the series $2(2^2-1^2+4^2-3^2+\ldots$, $2n$ terms$)$ is

$$S_n' = 2\{2n(n+1)-n\} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2).$$

Adding (1) and (2),

$$S_n+S_n' = 8n^2(n+1)^2-4n(n+1)(2n+1)+8n(n+1)-3n$$
$$= 2n^2(2n+1)^2+n(2n+1)$$
$$= 2(1^3+2^3+3^3+\ldots+2n \text{ terms}) + (1+2+3+\ldots, 2n \text{ terms}).$$

(III.)

$1^4-1^4+4^4-3^4+\ldots$, to $2n$ terms $+ 2(2^2-1^2+4^2-3^2+\ldots$, to $2n$ terms$)$
$= 2^4+4^4+\ldots$, to n terms $-(1^4+3^4+\ldots$, to n terms$)$
$+ 2\{(2^2+4^2+\ldots$, to n terms$)-(1^2+3^2+\ldots$, to n terms$)\}$
$= (S_1-S_2)+2(S-S')$, say.

Then $S_1 = 2^4(1^4+2^4+3^4\ldots$, to n terms$)$;

nth term in $S_2 = (2n-1)^4 = 2^4.n^4-4.2^3.n^3+6.2^2.n^2-4.2n+1$;

therefore $S_2 = S_1-8n^2(n+1)^2+4n(n+1)(2n+1)-4n(n+1)+n$.

$$S = 2^2(1^2+2^2+3^2+\ldots+n^2);$$

nth term in $S' = (2n-1)^2 = 2^2.n^2-4n+1$;

therefore $S' = S-2n(n+1)+n$;

therefore

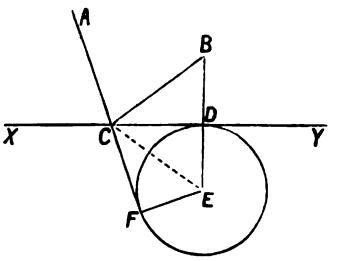
$$(S_1-S_2)+2(S-S') = 8n^2(n+1)^2-4n(n+1)(2n+1)+8n(n+1)-3n$$
$$= n(2n+1)(4n^2+2n+1).$$

Also $2(1^3+2^3+\ldots$ to $2n$ terms$)+(1+2+3+\ldots$, to $2n$ terms$)$
$= 2n^2(2n+1)^2+n(2n+1) = n(2n+1)(4n^2+2n+1)$.

Hence the result.

16564. (*Communicated by* E. P. Sergeant.)—A and B are two given points, XY a given indefinite straight line. Find a point C on XY, such that angle ACX equals twice angle BCY. [From Harper's *Euclid*.]

Solutions (I.) *by* F. C. Finlay, B.A., *and* Fred. C. Marks; (II.) *by* F. G. W. Brown, B.Sc., L.C.P.

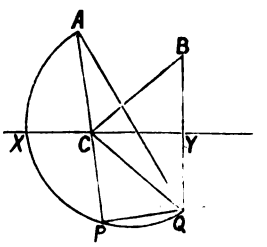


(I.) Let A and B be the points, XY the line.

Draw BD perpendicular to XY; produce it, and make DE equal to BD. Centre E, radius DE, describe a circle, draw AF tangent to it, cutting XY in C, between C and D. Join BC. Then angles FCE, DCE, and BCD are obviously equal; therefore

$$ACX = 2BCY.$$

Note.—Mr. Marks notices that with slight modification the above applies when A and B are on opposite sides of XY.



(II.) Draw BY perpendicular to XY, and produce it to Q, making

$$YQ = YB.$$

Join AQ, and on the side of it remote from B describe a semicircle APQ.

From Q draw the chord QP = QY.

Join PA, cutting XY at C.

Then $\triangle BCY = \triangle QCY = \triangle QPC$;

therefore $\angle BCY = \angle QCY = \angle PCQ$;

therefore

$$\angle ACX = \angle YCP = 2\angle PCQ = 2\angle BCY.$$

16131. (D. Biddle.)—At the vertices of an equilateral triangle are weights of value p, q, r $(p+q=r)$, which travel along the sides in the same positive direction at a uniform pace. Trace the locus of the centre of gravity. Also extend the investigation to triangles which are not equilateral, on the understanding that, though the sides be unequal, they are traversed by the weights in equal times.

Additional Solution by C. E. Youngman, M.A.

On the principle that when any two weights move uniformly in straight lines their centre of gravity also moves uniformly in another straight line—a principle which is equally true of three or more weights—the required locus is in each case a straight line, which to be drawn needs only that two definite positions of the centre of gravity should be found.

The geometrical proof of this principle probably appeared first in Newton's *Principia*, Lemma xxiii.

16402. (Professor Nanson.)—If $u_1, u_2, \ldots, u_n, v$ are $n+1$ quadratic functions of x, show that the value of

$$\int \frac{u_1 u_2 \ldots u_n}{v^{n+1}}\,dx$$

is algebraic, provided v is harmonically related to one of the u's.

Solution by the Proposer.

If the quadratic functions u_2, v of x are harmonically related, then, by a linear transformation $\int u_1 v^{-2}\,dx$ can be reduced to the form $\int (p+qX^2)X^{-2}\,dX$ and is therefore algebraic. Now operate on $\int u_1 v^{-2}\,dx$ with $a_r\,\partial/\partial a + b_r\,\partial/\partial b + c_r\,\partial/\partial c$ where a, b, c are the coefficients of v and r has the values 2, 3, ... n and the result stated follows.

16563. (A. Dakin, M.A.)—Find, by the methods of pure geometry,

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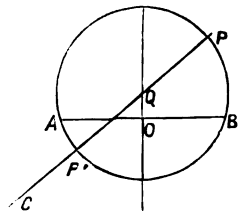
a point P in a given straight line c, such that the ratio AP : BP shall be a maximum; A and B are fixed points in a plane through c.

Solution by HENRY RIDDELL, M.E.

Bisect AB in O, and draw OQ perpendicular to AB, cutting the line C in Q. With centre Q and radius QA or QB draw the circle passing through A and B and cutting C in P and P'; then is AP/BP a maximum and AP'/BP' a minimum. The two circles of the Appolonian loci must touch C, and are themselves of the co-axial set having A and B for limiting points; therefore the tangents from Q, a point on the radical axis are equal to QA or QB, and P and P' are the points of contact.



16481. (Professor SANJÁNA, M.A.)—Find the sum of the series

$$1+x\frac{\sin 2\theta}{\sin\theta}+x^2\frac{\sin 3\theta}{\sin\theta}+\ldots+x^{n-2}\frac{\sin(n-1)\theta}{\sin\theta}+x^{n-1}\frac{\sin n\theta}{\sin\theta}$$
$$+x^n\frac{\sin(n-1)\theta}{\sin\theta}+\ldots+x^{2n-3}\frac{\sin 2\theta}{\sin\theta}+x^{2n-2}.$$

Solutions (I.) *by* A. M. NESBITT, M.A.; (II.) *by* D. M. KELKAR, B.A., L.T.

(I.) If we multiply the expression by $1-2x\cos\theta+x^2$, the coefficients of every power of x vanish, with the exception of x^0, x^n, x^{2n}. That of x^n comes at once to be $-2\cos n\theta$; thus the expression

$$=(1-2x^n\cos n\theta+x^{2n})/(1-2x\cos\theta+x^2).$$

It hardly needs pointing out that this will *not* give the sum of the first $2r-1$ terms by the substitution of r for n.

Or we may proceed thus. Denote $xe^{\theta i}$ by p and $xe^{-\theta i}$ by q, so that

$$pq=x^2 \quad\text{and}\quad p^rq^s+p^sq^r=2x^{r+s}\cos(r-s)\theta.$$

Then the proposed expression is easily seen to be the product of

$$p^{n-1}+p^{n-2}+\ldots+1 \quad\text{and}\quad q^{n-1}+q^{n-2}+\ldots+1,$$

and is therefore equal to $(p^n-1)(q^n-1)/[(p-1)(q-1)]$,

i.e., to $(x^{2n}-2x^n\cos n\theta+1)/(x^2-2x\cos\theta+1)$

as before.

(II.) Multiply the whole series by $\sin\theta$ and take it in two sections.

Let $S=\sin\theta+x\sin 2\theta+x^2\sin 3\theta+\ldots+x^{n-2}\sin(n-1)\theta+x^{n-1}\sin n\theta$,

$$-2x\cos\theta.S=\begin{cases}-x\sin 2\theta-x^2\sin 3\theta-\ldots\\ \ldots-x^{n-2}\sin(n-1)\theta-x^{n-1}\sin n\theta\\ -x^n\sin(n+1)\theta\\ -x^2\sin\theta-x^3\sin 2\theta-x^4\sin 3\theta-\ldots-x^n\sin(n-1)\theta,\end{cases}$$

$x^2S=x^2\sin\theta+x^3\sin 2\theta+x^4\sin 3\theta+\ldots+x^n\sin(n-1)\theta+x^{n+1}\sin n\theta$;

therefore $(1-2x\cos\theta+x^2)S=\sin\theta+x^{n+1}\sin n\theta-x^n\sin(n+1)\theta$.

Similarly, if

$S'=x^n\sin(n-1)\theta+x^{n+1}\sin(n-2)\theta+\ldots+x^{2n-3}\sin 2\theta+x^{2n-2}\sin\theta$;

then $(1-2x\cos\theta+x^2)S'=x^n\sin(n-1)\theta-x^{n+1}\sin n\theta+x^{2n}\sin\theta$;

therefore

$$(1-2x\cos\theta+x^2)(S+S')=\sin\theta-x^n\{\sin(n+1)\theta-\sin(n-1)\theta\}+x^{2n}\sin\theta$$
$$=\sin\theta(1-2x^n\cos n\theta+x^{2n});$$

therefore $$S+S'=\frac{\sin\theta(1-2x^n\cos n\theta+x^{2n})}{1-2x\cos\theta+x^2},$$

which, divided by $\sin\theta$, gives the sum of the given series.

8654. (F. MORLEY, B.A.)—There are n towns joined two and two by railroads. Show that it is possible to pass by rail over the entire system without using any railroad twice if n be odd, and impossible if n be even.

Solution by "SOLIDUS."

(1) If $2n$ towns are connected in pairs by roads, then each town has $2n-1$ roads leading to or from it. Now, for any town that is not the starting-point or the finishing point of the journey, the roads to it can only be traversed in pairs, one coming to it and the other going from it. Hence at least one road from or to such a town cannot be traversed without traversing another twice, so that on the whole at least $\frac{1}{2}(2n-2)$ or $n-1$ roads must be traversed twice in order to traverse all.

(2) To prove that the traversing is possible for any *odd* number of towns, we can proceed by mathematical induction, thus:—Assuming that the traversing has been done for all the roads connecting $2n-1$ towns, let two new towns A and B be taken, and let the town where the previous journey left off be marked 1, the others in any order being marked 2, 3, 4, ..., $2n-1$. Perform the journey 1A2B3A4B5A6 ... B$(2n-1)$AB1, which obviously traverses all the roads not traversed before. Now, traversing without repetition being possible for 3 towns, it is so for 5, 7, 9, ..., *i.e.*, for any odd number of towns.

16577. (Hon. G. R. DICK, M.A.)—P is any point in the plane of a triangle ABC whose circum-centre is O; a, b, c are the sides, R the circum-radius, Δ the area and AP $= x$, BP $= y$, CP $= z$. Show that $\Delta.OP^2=R^2(\Delta\pm\Delta')$, where Δ' is the area of a triangle whose sides are ax/R, by/R, cz/R respectively. Deduce Ptolemy's theorem.

Solution by R. F. DAVIS, M.A.

Upon PB describe the triangle PBQ directly similar to ABC so that PQ $= by/c$, PC $= z$, QC $= ax/c$; then the triangle PQC is similar to Δ', and the area PQC $= \Delta'(R^2/c^2)$.

Produce BP to meet the circum-circle in T; then angle

$$PCT=BPC\sim A=CPQ,$$

and CT is parallel to PQ.

Thus area PQC $= \Delta'(R^2/c^2)$ = area PTQ $= \frac{1}{2}PT.PQ\sin A$
$$=\tfrac{1}{2}\{(R^2-OP^2)/y\}(by/c)\sin A=(R^2-OP^2)\Delta/c^2.$$

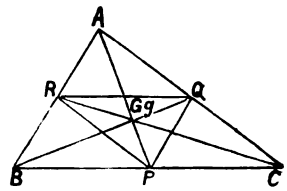
Thus $$\Delta'.R^2=(R^2-OP^2)\Delta.$$

When P is on the circum-circle $\Delta'=0$ and $ax\pm by\pm cz=0$.

Geometrical Note.

By S. G. SOAL.

Although the pedal and e-centre triangles have frequently been used to prove various theorems in connexion with the triangle, the following application of the triangle PQR whose vertices are the mid-points of BC, CA, AB, is one which personally I have never met with.



Evidently the triangles PQR and ABC are directly similar, and from the definitions it follows that

(i.) PQR and ABC have a common centroid.

(ii.) The ortho-centre of PQR is the circum-centre of ABC.

(iii.) The circum-centre of PQR is the nine-point centre of ABC.

(iv.) But the linear dimensions of the triangle ABC are double the corresponding linear dimensions of the triangle PQR.

Hence, using the facts (i.), (ii.), (iii.), in connexion with (iv.), we have at once the well known theorems that in a triangle ABC—

(i.) The distance between the centroid and the ortho-centre is double the distance between the centroid and the circum-centre;

(ii.) The distance between the centroid and the circum-centre is double the distance between the centroid and nine-point centre.

16569. (Professor SANJÁNA, M.A.)—For given values of θ, show how to determine a, b, c, a_1, b_1, c_1 so that the following relation may hold good:—$(a+a_1\surd\theta)^{\frac{1}{3}}+(b+b_1\surd\theta)^{\frac{1}{3}}=(c+c_1\surd\theta)^{\frac{1}{3}}$.

[All symbols denote rational quantities and some of the square roots may have either sign. Examples:

$$\surd(22+2\surd13)+\surd(10+2\surd13)=\surd(48+12\surd13),$$
$$\surd(22-2\surd13)-\surd(10-2\surd13)=\surd(48-12\surd13);$$
$$\surd(24+8\surd7)+\surd(5+\surd7)=\surd(45+17\surd7),$$
$$\surd(24-8\surd7)-\surd(5-\surd7)=\surd(45-17\surd7).]$$

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

Squaring the given equation, and rearranging

$$\{c-(a+b)\}+\{c_1-(a_1+b_1)\surd\theta\}=2\surd\{ab+a_1b_1\theta+(a_1b+ab_1)\surd\theta\}.$$

Now let this be compared with the identity

$$8\gamma+8\gamma_1\surd\theta=2\surd16(\gamma^2+\gamma_1^2\theta)+32\gamma\gamma_1\theta.$$

On identifying the two

$$c-(a+c)=8\gamma,\quad c_1-a_1+b_1=8\gamma_1 \ldots\ldots\ldots\ldots \text{(A)}.$$
$$ab+a_1b_1\theta=16(\gamma^2+\gamma_1^2\theta),\quad a_1b+ab_1=32\gamma\gamma_1 \ldots\ldots \text{(B, C)}.$$

Here γ, γ_1 are two arbitraries, which may be assumed at pleasure (integers of course). After which the four quantities a, b, a_1, b_1 have to be determined to satisfy only the two equations (B), (C); so that two of them may be assumed also (with some slight restrictions).

Finally c, c_1 are given (uniquely) by (A).

Example.—Take $\gamma=2$, $\gamma_1=1$. Hereby equations (B), (C) become

$$ab+a_1b_1\theta=64+16\theta,\quad a_1b+ab_1=64 \ldots\ldots\ldots \text{(B', C')}.$$

Ex. 1. — Taking $\theta=13$, assume $a_1=b_1=2$; (B'), (C') give $ab=64+12\theta$, $a+b=32$; where $a=22$, $b=10$; $c=48$, $c_1=12$ (as in the author's example).

16583. (W. J. GREENSTREET, M.A.)—In an examination the candidates must get x marks on the first of the four papers set. The maximum number obtainable on each paper is y, and the minimum for a pass is y. In how many ways can a candidate just get his y marks for a pass?

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Solution by T. K. VENKATARAMAN, M.A.

The number of ways in which the candidate can get just y marks under the given conditions is evidently the same as the number of ways in which the partial product a^y can be formed in the product

$$(a^x + a^{x+1} + \ldots + a^y)(a^0 + a^1 + a^2 \ldots + a^y)(a^0 + a^1 + \ldots + a^y)(a^0 + a^1 + \ldots + a^y),$$

which

$$= \text{the coefficient of } a^y \text{ in } (a^x + a^{x+1} + \ldots + a^y)(1 + a + \ldots + a^y)^3$$
$$= \;,, \quad ,, \quad ,, \;,, \;,, \; a^x(1-a^{y-x+1})/(1-a).[(1-a^{y+1})/(1-a)]^3$$
$$= \;,, \quad ,, \quad ,, \;,, \;,, \; a^x(1-a^{y-x+1})(1-3a^{y+1}+3a^{2y+2}-a^{3y+3}) \times [1 + 4a + (4.5)\,a^2/2! + \ldots]$$
$$= \text{the coefficient of } a^{y-x} \text{ in } (1-3a^{y+1}+3a^{2y+2}-a^{3y+3})(1+4a+\ldots)$$
$$= \;,, \quad ,, \quad ,, \;,, \;,, \; 1.[1 + 4a + \tfrac{1}{2}(4.5)\,a^2 + \ldots]$$
$$= [4.5.6\ldots(y-x+3)]/(y-x)! = (y-x+1)(y-x+2)(y-x+3)/3!.$$

16549. (Professor E. B. ESCOTT).—In the recurring series

$$P_n;\; 1,\, x,\, x^2-x-1,\, x^3-2x^2-x+1, \ldots$$

where the scale of relation is

$$P_{n+2} = (x-1)\,P_{n+1} - P_n,$$

prove that $P_{\frac{1}{2}(p-1)} \equiv \pm 1 \pmod p$ according as $x-3$ is a quadratic residue or a non-residue of p, p being an odd prime.

Solution by the PROPOSER.

We can easily prove that

$$P_n = (a^{2n+1} - b^{2n+1})/(a-b),$$

where $a = \frac{1}{2}[\sqrt{(x+1)} + \sqrt{(x-3)}]$, $b = \frac{1}{2}[\sqrt{(x+1)} - \sqrt{(x-3)}]$,

$$a^p = (1/2^p)[\sqrt{(x+1)} + \sqrt{(x-3)}]^p$$
$$\equiv [(x+1)^{\frac{1}{2}(p-1)}\sqrt{(x+1)} + (x-3)^{\frac{1}{2}(p-1)}\sqrt{(x-3)}]/2^p \pmod p,$$
$$b^p \equiv [(x+1)^{\frac{1}{2}(p-1)}\sqrt{(x+1)} - (x-3)^{\frac{1}{2}(p-1)}\sqrt{(x-3)}]/2^p \pmod p.$$

Therefore

$$P_{\frac{1}{2}(p-1)} = (a^p - b^p)/(a-b) \equiv (x-3)^{\frac{1}{2}(p-1)}/2^{p-1} \equiv (x-3)^{\frac{1}{2}(p-1)} \pmod p$$
$$\equiv \pm 1 \pmod p,$$

according as $x-3$ is a quadratic residue or non-residue of p.

16578. (S. NARAYANA AIYAR.)—If O (AA′, BB′, CC′, ...) be any pencil in involution, and if a circle be drawn through the point O cutting the rays of the pencil in the points A, A′; B, B′; C, C′; ...; then the locus of the orthocentre of the triangles OAA′, OBB′, OCC′, ... is a circle.

Solution by R. F. DAVIS, M.A.

Let the focal rays of the pencil intersect the circle in S, S′. Then, since O (ASA′S′) = −1, AA′ passes through a fixed point T, the intersection of tangents at S, S′ to the circle.

The line joining O to the orthocentre of OAA′ is parallel to and double the line joining C (the centre of the circle) to M (the middle point of AA′).

But the locus of M is the circle upon CT as diameter; whence, &c.

16490. (Professor NANSON.)—Find the condition that the three involutions determined by three pairs of points on the same base may have one focus in common.

Solution by the PROPOSER.

If the three pairs of points are given by the three quadrics $u = 0$, $v = 0$, $w = 0$, the foci of the three involutions are found by equating to zero the Jacobians of v, w; w, u; u, v. Now, if no one of u, v, w is a perfect square, the three Jacobians vanish if any two of them vanish. Hence, in general, the condition for one focus in common is found by equating to zero the dialytic eliminant of the three Jacobians. Now this dialytic eliminant is clearly the adjugate, and therefore the square, of the dialytic eliminant of u, v, w. Because we have a perfect square, we infer that both foci must be common, and this is the case, because the condition found merely expresses that u, v, w are in involution.

If u is a perfect square, then the two-fold point it determines is of necessity a focus of the two involutions determined by u, v; u, w. The condition that it is also a focus of the involution determined by v, w is that it satisfies the Jacobian of v, w.

Thus, unless the three pairs of points belong to the same involution, and so have both foci in common, one of the three pairs must be a coincident pair, and the point of coincidence must satisfy the Jacobian of the remaining two pairs.

QUESTIONS FOR SOLUTION.

In Question 16590 (see *Educational Times*, February, 1909) x, y, z should be cyclically interchanged in the successive equations. Also on p. 79, l. 34, as above, for x^8 read $4x^8$.

16602. (A. M. NESBITT, M.A.)—A mass of liquid is stirred, and its volume changes in the process from v to μv. Prove that the chance that at any given instant *no* particle is in its initial place is $e^{-1/\mu}$.

16603. (S. NARAYANA AIYAR.)—$\phi_1(x), \phi_2(x), \ldots, \phi_n(x)$ are n functions of x, which are expansible in powers of x with the respective absolute terms $a_1, a_2, a_3, \ldots, a_n$. $c_1, c_2, \ldots, c_n$ and $s_1, s_2, \ldots, s_n$ denote respectively the real and imaginary parts of the functions $\phi_1(re^{i\theta})$, $\phi_2(re^{i\theta}), \ldots, \phi_n(re^{i\theta})$ [*i.e.*, $\phi_1(re^{i\theta}) = c_1 + is_1$, &c.]. S_r denotes the sum of the products of any r of the quantities $s_1, s_2, \ldots, s_n$ and the remaining $n-r$ of the same quantities with c written for s, the quantities being chosen in every possible way; thus

$$S_0 = c_1c_2c_3\ldots c_n, \quad S_1 = s_1c_2c_3\ldots c_n + s_2c_1c_3\ldots c_n + \ldots + s_nc_1c_2\ldots c_{n-1},$$

....

Show that

$$\int_0^\pi (S_0 - S_2 + S_4 - S_6 + \ldots)\,d\theta = \pi a_1a_2a_3\ldots a_n,$$

$$\int_0^\infty [(S_0 - S_2 + S_4 - \ldots) - \theta(S_1 - S_3 + S_5 - \ldots)]\frac{d\theta}{1+\theta^2} = \frac{\pi}{2}a_1a_2a_3\ldots a_n.$$

16604. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show how to use tables of the roots $(y_2, y_3, y_4, y_6, y_8, y_{12})$ of the congruences $y_2^2+1 \equiv 0$, $(y_3^3 \mp 1) \div (y_3 \mp 1) \equiv 0$, $y_4^4 + 1 \equiv 0$, $(y_6^6+1) \div (y_6^2+1) \equiv 0$, $y_8^8 + 1 \equiv 0$, $(y_{12}^{12}+1) \div (y_{12}^4+1) \equiv 0$ to factorize numbers $N = (x^{12}+y^{12}) \div (x^4+y^4)$, where $xy > 1$ and all symbols are integers, and give an example with $N > 10^7$.

16605. (Professor SANJÁNA, M.A.)—In the solution of the equation $a^2 - Nb^2 = \pm 1$, where N is a rational quantity greater than unity, let the values of a and b form the series $a_1, a_2, a_3, \ldots, b_1, b_2, b_3, \ldots$. Show that these series are recurring with the scale of relation $1 - 2a_1x \pm x^2$, and that $2a_rb_r = b_{2r}$.

16606. (Professor SANJÁNA, M.A.)—Prove that $20^{35}-1$ is the product of the following numbers:—19; 11; 61; 251; 29; 71; 32, 719; 6, 527, 898, 023, 267, 251; 2, 441, 576, 160, 715, 231. Also analyse the last two factors.

16607. (R. F. DAVIS, M.A.)—Prove that the solution of the biquadratic equation $x^4 + px^2 + qx + r = 0$ reduces to the solution of the quadratic $x^2 + \alpha x + \beta = 0$, where α is a real root of

$$\alpha^6 + 2p\alpha^4 + (p^2 - 4r)\,\alpha^2 - q^2 = 0 \quad \text{and} \quad \beta = 2r\alpha/(\alpha^3 + p\alpha + q).$$

16608. (Professor COCHEZ.)—Construire la courbe

$$\rho^2 \cos 2\omega + 2a\rho\cos^3\omega + a^2\sin^2\omega = 0.$$

16609. (W. J. GREENSTREET, M.A.)—Find geometrically the locus of the centres of ellipses with the same focus, and touching a given line, and passing through a given point.

16610. (SARADAKANTA GANGULI, M.A.)—TP, TQ are tangents to a given ellipse. If the area of the triangle TPQ be constant, find the locus of T.

16611. (V. RAMASWAMI AIYAR, M.A.)—Let ABC be a given triangle, whose circum-centre is O and circum-radins unity. Let P be a variable point on the circum-circle. Let α, β, γ, u denote the vectors—from O to A, B, C, P; and V the vector to the focus of the parabola circumscribing the triangle ABC and having its axis in the direction of u. Prove that

$$V = [(4pr - q^2)\,u^8 + 8r^2u^6 + 2qr^2u^4 - r^4]/[4u^2r\,(u^6 + qu^4 + pru^2 + r^2)],$$

where $\quad p = \Sigma\alpha, \quad q = \Sigma\alpha\beta, \quad r = \alpha\beta\gamma.$

16612. (C. E. YOUNGMAN, M.A.)—In a rectangular hyperbola, tangents forming a triangle A′B′C′ touch at A, B, C; then if ABC is equilateral it has the same orthocentre as A′B′C′. More generally, if an in- or ex-centre of ABC lies on the curve, the orthocentre of A′B′C′ coincides with it; or, better still, the hyperbola is always the isogonal transformation of some diameter of the circle ABC, and the pole of that diameter is the orthocentre of A′B′C′.

16613. (H. L. TRACHTENBERG, B.A.)—The angular points of a triangle, the foci of the maximum inscribed ellipse, and the symmedian point lie on a conic.

16614. (*Communicated by* JAMES BLAIKIE, M.A.)—E and F are the mid-points of the sides AB, BC of a triangle ABC. G is a point in BC such that EG^2 = triangle ABC. If FN be drawn perpendicular to EG, prove that $FN = \frac{1}{2}EG$.

16615. (W. AUSTIN SLEIGH, B.A. Suggested by Question 15782.)—If K be the mid-point of the side BC of a triangle ABC, and I, I_1 the in-centre and ex-centre opposite A respectively, prove that

$$KI^2 + KI_1^2 = \tfrac{1}{2}(II_1^2 - BC^2).$$

[*Note.*—As problems also bearing on Question 15782, Mr. Sleigh *communicates* the following:—(1) If I be the in-centre, I_1 the ex-centre opposite A of the triangle ABC, and P, K the mid-points of II_1 and BC respectively, prove that PK is perpendicular to BC; (2) Ex. 6, p. 52 of Richardson and Ramsey's *Properties of Triangles*.]

16616. (Professor NEUBERG.)—Sur les côtés d'un triangle ABC on construit extérieurement trois rectangles BCDE, CAFG, ABHK dont les trois hauteurs CD, AF, BH ont une somme donnée l. Trouver le maximum de la somme des aires des triangles CDG, AFK, BHE et celui de la somme $DG^2 + FK^2 + HE^2$.

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16617. (M. T. Naraniengar, M.A.)—Prove that the vertices of the harmonic triangle of the Feuerbach quadrilateral lie on the sides of the pedal triangle.

16618. (T. E. Lindfield.)—If

$$\sin\theta = a/b\sin\phi \quad \text{and} \quad \cos\theta = c/d\cos\phi,$$

prove that $\sin(\theta+\phi) = \sqrt{[(b^2-a^2)(c^2-d^2)]}/(ad-bc)$

and $\cos(\theta+\phi) = (ac-bd)/(ad-bc)$.

16619. (C. M. Ross.)—Solve the equation

$$\tan^{-1}x/a + \tan^{-1}x/b + \tan^{-1}x/c + \tan^{-1}x/d = \pi/2.$$

16620. (Professor Nanson.)—A skipper sails one mile on a course α to the west of north, and then another mile on a course β to the west of north. What is then his (1) bearing from, (2) distance from, (3) distance to the north of, his starting point?

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11248. (Professor Sylvester.)—Let $p_1, p_2, \ldots, p_m$; $q_1, q_2, \ldots, q_n$ be any two sets of given positive quantities (integer or fractional, rational or irrational) such that $\Sigma p = \Sigma q$. Then using $E(u)$ to mean the integer part of u, prove that the sum of the maximum and minimum values $\Sigma E(px) - \Sigma E(qx)$ as x passes from 0 to ∞ is equal to $n-m$.

11370. (The late Professor Clifford, F.R.S.)—ξ_1, ξ_2, ξ_3, ξ_4 are connected with x_1, x_2, x_3, x_4 by the equations

$$2\xi_1 = -x_1+x_2+x_3+x_4, \quad 2\xi_3 = x_1+x_2-x_3+x_4,$$
$$2\xi_2 = x_1-x_2+x_3+x_4, \quad 2\xi_4 = x_1+x_2+x_3-x_4,$$

find the x's and the sum of their squares, in terms of the ξ's; and prove that

$$\theta x_1.\theta x_2.\theta x_3.\theta x_4 + \theta_1 x_1.\theta_1 x_2.\theta_1 x_3.\theta_1 x_4 = \theta_1\xi_1.\theta_1\xi_2.\theta_1\xi_3.\theta_1\xi_4 + \theta\xi_1.\theta\xi_2.\theta\xi_3.\theta\xi_4.$$

11507. (M. Brierly.)—A plummet, hung by a small ring, slides freely upon an inelastic string one end of which is fixed in a vertical plane; determine the locus of the other end of the string, so that, moving upwards or downwards, the plummet shall describe a circle upon the plane.

11509. (J. H. Grace, M.A.)—Having given three circles A, B, and C, (1) draw a circle which shall touch A, cut B orthogonally, and bisect the circumference of C, and (2) find how many circles can be so drawn.

11514. (Professor Morley, M.A.)—Let the complex variables w, z be connected by the relation $2w = z + b^2/z$; show that if z describes a circle, w describes a nodal bicircular quartic.

11569. (Colonel Clarke, C.B., F.R.S.)—The sum of three chords in a given circle (radius = a) is c. Find the chance that a triangle could be formed of them.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss Constance I. Marks, B.A., 10 Matheson Road, West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, February 11th, 1909.—Sir W. D. Niven, President, in the Chair.

The following papers were communicated:—

"The Conformal Transformations of a Space of four Dimensions and the Generalization of the Lorentz Einstein Principle," Messrs. H. Bateman and E. Cunningham.

"On a Certain Family of Cubic Surfaces," Mr. W. H. Salmon.

"Some Fundamental Properties of a Lebesgue Integral in a Two-dimensional Domain," Dr. E. W. Hobson.

"On the Relation between Pfaff's Problem and the Calculus of Variations," Prof. A. C. Dixon.

"On Implicit Functions and their Differentials" and "On Indeterminate Forms," Dr. W. H. Young.

"Modular Invariants of a General System of Linear Forms," Prof. L. E. Dickson.

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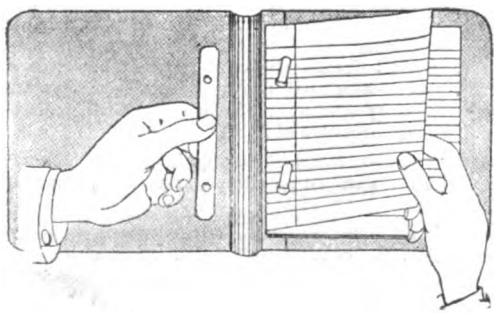

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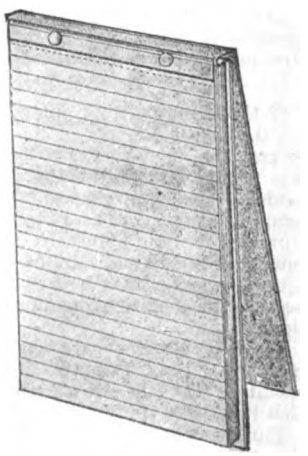

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III. (Feb. 18.) *Presentational Processes:* Sensation and the senses: the "preferred sense": practical applications of the theory of preferred sense: the training of the senses: distinction between sensation and perception: meaning and limits of observation and experiment: the "gaping point": the area of observational activity: distinction between observation and inference: the movable inference index.

IV. (Feb. 25.) *Representational Processes:* distinction between gathering and elaborating material: conception: the static and dynamic view of ideas: ideas as forces: changes in the activity of a given idea: copresentation and interplay of ideas: hierarchy of ideas: the fixed idea: marginal and focal ideas: the possibility of the subconscious influence of ideas.

V. (March 4.) *Soul-building:* nature and scope of association: usual limitation to ideas: really of general application: association makes habits possible: advantages and disadvantages of habit forming: the "growing point": accommodation and co-ordination: the old and the new laws of the association of ideas: Paulhan's view: manipulation of association in teaching.

VI. (March 11.) *Memory:* relation to personal identity: physical basis of memory: possibility of improving memory as a natural power: the associative and the rational memory: mnemonics and the *memoria technica:* mediate and immediate recall: temporary and permanent memory: the nature of the memory implied in "cram": rote-learning: relation between memory and general intelligence.

VII. (March 18.) *"The Busy Faculty":* unjustified depreciation of the imagination: differentiation from memory: aesthetic and practical spheres of imagination: "day-dreaming": need to imagine processes as well as results: misleading use of the word "ideal": the need for clearly imaged ends in practical life: application to the teaching of Geography, History, Arithmetic, and Geometry: imagination as a drag on thought.

VIII. (April 29.) *Regulation of Consciousness:* nature of attention: relation to interest: teachers' distrust of interest: confusion with pleasure: interest and attention as cause and effect: various classifications of the kinds of attention: the physiological basis of attention: the alternation between concentration and diffusion: possibility of degrees of attention.

IX. (May 6.) *Reasoning:* technical distinction between judgment and reasoning: both included in popular term *thinking:* fundamentally an adaptation of means to ends on the ideational plane: thinking may be called the purposive aspect of apperception: laws of thought as thought: the most fundamental law of all thinking: induction, deduction, and fallacies.

X. (May 13.) *Feelings and Emotions:* the pleasure-pain tone that accompanies the activities of the soul: unjustified depreciation of the emotions: driving power of spiritual life: relation to ideas: expression of the emotions, and the various theories connected with it: practical applications to school work: control of the emotions: relation between feeling and desire.

XI. (May 20.) *Desire and Will:* activity of desire: relation to possibility of attainment: expectation of success: evolution of will out of desire: nature and function of motive: fallacy of "the strongest motive" theory: subjective and objective aspects of the will: what is meant by training the will and breaking the will: the problem of the free will of educator and educand.

XII. (May 27.) *Temperament and Character:* various meanings attached to the term *temperament* in ancient and modern times: accepted classifications: physical characteristics of the temperaments: permanency of temperament: possible modifications: the time element: influence of temperament on character: character types and their classification: use and abuse of schemes of classifying characters.

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Registration in Delay.

It has been a subject of reckless reproach to schoolmasters that they very seldom agree; but there is no doubt that all the thinking members of the scholastic profession are in agreement that there is urgent need for Registration. One cannot affect surprise if those that are less familiar with the practical working of official machinery are manifesting impatience at delays that do not seem to be readily intelligible. The College of Preceptors has laboured at the question for half a century, and almost a generation has passed since Lord Playfair introduced his first Registration Bill. It is true that at one period we were really in possession of a Register of which for a time great hopes were widely entertained; but no stronger evidence of its complete failure could be given than the statement, recorded in the Report for 1905 of the Teachers' Registration Council, that less than twenty men and less than two hundred women with definite professional training qualification had been admitted to the Register since its foundation in 1902, and this in spite of the fact that the object of the Register was mainly to induce intending teachers in secondary schools to submit themselves to a course of careful professional training.

No wonder that the Board of Education has meantime sought additional means of increasing the recognition of training for secondary school staffs, and that in the new conditions of grant to the grant-aided schools there is inserted the warning that a certain proportion of all new appointments may be required to consist of trained teachers. Having shown how pressure in favour of training may be exercised in the early future, and having provided for direct Exchequer grants in aid of training colleges for secondary-school teachers, the Board of Education seems to rest content for the moment, throwing entirely upon the teaching profession itself the business of formulating the lines of a Teachers' Registration Council and the conditions for admission to a professional Register. So far as private schools are concerned, naturally they will not be affected by the conditions of grant—unless, indeed, they are on the Board of Education List of Efficient Secondary Schools, in which case the conditions of recognition as efficient will probably be similar to the conditions of grant. For many reasons, however, private teachers generally will, no doubt, be content simply to see that the efficiency of their schools is well maintained. But, even if the Board has found independent means (other than the Register) of increasing the number of trained teachers, one has difficulty in defending its position when it is charged with ungenerous and unfair, if not with positively illegal, procedure, in casting the whole work of the reconstruction of a registration system upon the teachers' representatives.

Representatives of the more considerable bodies of secondary teachers, in association with the National Union of Teachers and with delegates competent to speak for technical education, under the presidency of Dr. Gow, have made a great united effort to solve the difficulty of forming a new Registration Council and a new Register. Their proposals are, undoubtedly, of a practical and substantial character, in view of the extreme variety and complication of the materials. But, instead of making or even suggesting any improvements, the Board of Education has applied merely a negative and embarrassing criticism. The scheme for the New Council is not sufficiently "representative of the teaching profession" as required by the Act, because, forsooth, kindergarten teachers, music teachers, art teachers, cookery teachers, and so forth, are not all and each provided with representation.

It would be irksome to criticize, in detail, the various applications that have been made to the Board for separate representation. Most of the bodies, indeed, are important and useful in their various spheres; but that is not enough to justify special representation on a general educational council. One or two of them, however, appear to have escaped the scrutiny of the Board. To give representation to each *bona fide* society of teachers on the fringe would be impossible: it would swell the Council to an impracticable size, and render the representation absurdly disproportionate. On the other hand, it cannot be too clearly pointed out that the absence of a special representative of any small society of teachers from the Registration Council does not mean the exclusion of such society either from effective representation on the Council or from enrolment on the Register.

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There is one logical, substantial, and sufficient way of meeting the difficulty. Teachers may be divided into elementary, secondary, and technical, and a proportionate representation given to each division. University teachers could be adequately represented by the proposed nominees of the Crown. Each of these sections of representatives might be looked upon as representing the various groups of teachers coming substantially within the respective divisions. Something of this kind has already been foreshadowed by the action of the technical associations in relation to some numerically powerful bodies of teachers of (chiefly) single technical subjects. It is possible that more representatives will be given to technical teachers, and it is probable that one representative will be given to music and another to art. For all practical purposes, such an arrangement would seem to be perfectly fair and adequate and workable—at all events, to start with. It is not to be forgotten, however, that such teachers as are entrusted with the control of the moral as well as the intellectual education of their pupils, may reasonably claim a representation beyond that of teachers of single subjects. If we refer to the analogy of the Medical Council, we see that only those are registered who have built up their qualifications on the sound basis of a good general education, and that people of many occupations kindred to the medical profession, however worthy they may be in their several spheres, find no place upon the Medical Register.

It would be rash to prophesy the date of settlement of this question of Registration. Unfortunately, rapid progress is not easy. The delegates to Dr. Gow's Committee are also the delegates to the Federal Council, and each resolution, after leaving Dr. Gow's Committee, has to be considered first by the Federal Council and then by the separate Associations composing the Council; and every step takes time. The Head Masters' Association, however, give their representatives full power to act on Dr. Gow's Committee, and if in this they in some measure leave the other members of the Federal Council behind, it is to be hoped that they will still identify themselves with the Federal Council (their own creation), and give Mr. Easterbrook, the newly elected chairman, all possible support. The united action of all teaching bodies is required at this juncture, if the Board of Education is to be induced to fulfil its statutory duty of "constituting a Registration Council representative of the teaching profession." It is difficult to understand why it stands so coldly aloof; but, if the advantage already gained is followed up in all earnestness, it will be impossible for the Board to resist what is a legitimate demand made not only in the interests of the teaching profession, but in the interests of education generally.

NOTES.

It is painful to learn that one of the greater Education Authorities, which "some years ago inaugurated and publicly advertised a salary scheme under which a fair stipend was held out to teachers"—a stipend that "was to be increased annually"—"is now on the point of repudiating its obligations to teachers because there is a delay on the part of the Government in adjusting Imperial and local contributions towards the educational budget." The *A.M.A.* says:

> While the Authority is engaged in a quarrel which may prove costly, and will assuredly prove tedious, the annual increases held out to teachers as an inducement to join the service are to be discontinued. The matter is under the careful consideration of the Executive Committee of the Association, which is determined to use every legitimate effort to prevent such a pettifogging transaction from taking place. To attempt to remedy one grievance by the infliction of another is utterly unworthy of any educational body, degrades the very name of education, and is particularly odious in so far as it emphasizes the subordinate position which teachers occupy in our social system.

If a great Education Authority be tempted to such action, what may be anticipated from less powerful and less enlightened bodies? One must hope that this Authority will stand firmly to its obligations, which it no doubt undertook upon mature consideration of ways and means; and, if its reasonable expectations have been defeated by the Government, then it should treat with the Government for a just remedy. It is a very serious matter for any public body to be chargeable with "repudiating its obligations," whether to teachers or otherwise. Our contemporary does well to be vigilant and outspoken. "The members of the profession now turn to Mr. Runciman, with the sure conviction that he will not desert them in their need." We have every confidence that Mr. Runciman will do all that is officially possible in the circumstances, and we earnestly hope he will find a way out of the difficulty.

As *Secondary Education* remarks, the published reports of school medical officers afford anything but pleasant reading. "A very large percentage of children in attendance at elementary schools are found to be suffering from physical defects in some form or other." Yes; and if the medical officers all had specialist knowledge, and were numerous enough to make thorough examinations, the results would be still more disturbing. What follows? "It is clear," as our contemporary points out "that, if the money spent on medical inspection is not to be mainly wasted, Local Authorities will have to make provision for the medical treatment of school children. As well expect the mere recognition of the fact that a person is suffering from a broken leg to mend that broken leg, as to expect any good results from inspection unless it is followed up by treatment. In the interests of the children, it is right that steps should be taken to provide necessary treatment." And then attention will have to be turned to the parents. "What is to be thought of the many parents who seem not to realize that they are under any obligation to perform the primary duties of parenthood?" What is to be thought is clear enough; the question is, what is to be done? Ignorance and unintelligence are, no doubt, accountable for much; but irresponsible carelessness should be visited with a bracing reminder of social duty. The liberty of the subject is all very well, but it is for the State to deal promptly and sternly with cases of reckless parental neglect.

A significant step has been taken by Glasgow University, and it is anticipated that the other Scots Universities will follow Glasgow's example. Principal MacAlister has announced that in the bursary examinations the same maximum marks are henceforth to be assigned to all languages.

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French and German, accordingly, will count for as much as Latin and Greek. "To the outsider," says a Scots contemporary, "this may appear a small matter, but by those that have for years been fighting for a better recognition of the claims of modern languages it will be felt that now more than half the battle has been won." The concession removes a serious handicap on French and German; and now it becomes still more urgent that the existing modern language lectureships should be elevated to the status of professorships.

Will Oxford reform herself, or shall she be reformed by external interference? A small but significant test has just been applied. After a two years' incubation, there was submitted to Congregation the other day a statute providing "that a Bachelor of Arts shall not be permitted to supplicate for the degree of Master of Arts unless he shall have obtained some distinction beyond the passing of such examinations as are a necessary qualification for the degree of Bachelor of Arts." The preamble was rejected by a majority of twenty-eight votes. The Oxford M.A. will therefore continue to signify simply that the bearer has passed the examinations for B.A. and has waited a short time and paid some additional fees. So far as increase of knowledge or of mental power is concerned, it gives no guarantee beyond the B.A. Apart from comparisons with the newer Universities, it seems a sheer waste of machinery to neglect to make an educational differentiation between the lower and the higher degree. "If the statute is defeated," said Dr. Macan, "the appeal will be to Caesar, and I do not know what Caesar may do." Upon this, the *Morning Post* very naturally remarks:

> Who is Caesar? Is it the Government which, through its spokesman in the House of Lords, twenty months ago asked for evidence of such an "intolerable weight of obstruction" as would justify the demand for a Commission? Or is it the Chancellor of the University, who, before his recent illness, announced his intention of preparing a reform scheme, and who will probably find a large and loyal minority of academic opinion behind him if he takes up the challenge now flung at his feet? Or is it the public opinion of the country, which is beginning to show unmistakable symptoms of its interest in University questions? The interpreter of Herodotus knew his master too well to tell us, but we have no doubt that his dark saying will soon come true.

When such a small and obvious reform as this is deliberately rejected, it will be somewhat difficult to persuade Caesar or anybody else that there is the remotest chance of reform from within, at all events to any extent approaching the necessities of the time. An educational institution that stereotypes itself in these days certifies its resolution to keep out of touch with progressive ideas: it declares for stagnation and decay. Caesar, we apprehend, will take a very different view of the national duty of Oxford.

Mr. Carnegie has thoroughly deserved the "specially congratulatory resolution" passed by the Carnegie Trustees on the motion of Mr. Balfour—congratulations "for the great success that has attended his efforts and hopes in the direction of encouraging original research in the Universities of Scotland." The results of post-graduate study and research encouraged by the Trust were reported to be on the whole eminently satisfactory. Mr. Balfour, emphasizing the value of this department of work of the Trust, declared that there was no greater or more serious waste in the world than waste of brains and intellect, of originality and of scientific imagination, which might be used to further the knowledge of mankind. That is true; and it is only too true that this waste, which Mr. Carnegie's benefaction stems to some extent, is enormous. Mr. Balfour said "they wanted to catch the man immediately after he had gone through his academic course, before he had become absorbed in professional life." One would be reluctant to discourage such ardour: it at least gives chances of discovering effective researchers; but, while we should not think of doubting that much of the Carnegie research work has been of "a uniformly high character," we know that not a little research work by fresh graduates, in this and in other countries, derives its main value from industrious compilation and is too often jejune in grasp and in original suggestion. On the other hand, it would be only too easy to point to professors that are eminent in research and ineffective in teaching, both rôles suffering from the combination enforced by pecuniary conditions. The fact is that research is urgently demanding recognition as an independent occupation of public importance; and it seems far more necessary to endow mature men that have proved their value as researchers than to assist inexperienced youths to show that they may possibly become useful as researchers. It is quite true that the most capable of researchers may occasionally learn from the queries of students, and no rigid rule can be laid down for the dissociation of research from teaching; but it is none the less true that in many cases the teaching would be more efficiently done by men of more common clay, and that the researcher would generally do more and better work if he were not tied to a class by his salary, or, if there be no salary, to other bread-and-butter labours.

To come down to the case of the ordinary student, the waste is equally grievous. The average graduate may not be expected to strike out new ideas or to increase the quantity of knowledge in the world; but his education, such as it is, must enable him to be a more effective citizen than he would have been without it. More than eight thousand Scottish youths have been assisted in the past seven years in their academic education by the fee department of the Carnegie Trust. It would be a mistake to suppose that but for the benefaction these thousands would have been kept outside the pale of the University; but the Carnegie contribution has more or less relieved the strain that Scottish parents are so keen to put upon their narrow resources for the education of their children. In England, unfortunately, there is but small indication of such ambition and self-sacrifice for the advancement of the rising generation as are general characteristics of the Scottish parent. Some part of the reason may lie in the mere fact that the English parent of low degree is unaccustomed to the rise of children in his sphere of life to higher planes of social usefulness; but another part is no doubt the cost and the prolonged strain of the effort for advancement. In any case it is a tragic situation for parent and children, and it is an appalling waste from the point of view of the State.

> That a brain capable of high attainment and desirous of the highest knowledge (says the *Daily News*) should remain ineffectual and empty simply for want of the opportunities that only wealth can give—this is

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one of the most terrible tragedies of our civilization, though it is so common as to pass almost unnoticed. Though it happens a hundred times every day, it is a tragedy none the less. Of all the thousands of boys and girls who leave our primary schools every year there is hardly one in a thousand, we suppose, who gets a fair and equal opportunity with the rich for the best education. They leave exactly at the age when the rich man's child is going to one of our great schools, and for the most part they never hear of education again. That is the true waste of brain. Among those thousands there must be some, there are probably many, who have minds specially fitted for that original research of which Mr. Balfour spoke, or for some other function of the highest intellect. But to them the opportunity never comes and they pass unnoticed, very likely into the chaos of the casual labourers.

Where, then, is the English Carnegie? Or when shall we have an Education Minister that will provide for the reasonably full utilization of the brain power of the country?

SUMMARY OF THE MONTH.

THE estimates for Civil Services for the year ending March 31, 1910—Class IV., Education, Science, and Art—have been issued as a White paper [54–IV.]. The estimates for the year 1909–10 amount to £17,911,143, which, compared with grants in the Session of 1908 (£17,685,886), show a net increase of £225,257. The estimates for the Board of Education are £13,648,792, as compared with grants in 1908 of £13,587,806, an increase of £60,986. These estimates show increases as compared with the grants of 1908 under the following heads:—Salaries and allowances, £11,070; pensions and gratuities in respect of public elementary schools, £11,630, and grants in lieu of fees, £15,000; maintenance grants for training colleges, £55,000; grants for secondary schools and instruction of pupil-teachers, £23,550; grants for technical institutions, schools of art, and evening schools, £20,000. The total estimates for the British Museum are £127,935; for the Natural History Museum, South Kensington, £60,543; for the National Gallery, £11,725 (as compared with grants last year of £24,414), the National Portrait Gallery, £5,793, and the Wallace Collection, £6,614. The total estimates for those institutions which come under the heading "scientific institutions, &c.," are £57,964, the chief increases being sums of £4,500 and £2,000 for the National Library of Wales and the National Museum of Wales respectively. The provision made for Universities and colleges shows an increase of £15,000 for "Welsh University and Colleges: additional grant." Public education, Scotland, is represented by estimates for £2,147,541—a net increase of £98,984, of which £76,463 is a general aid grant for elementary schools, and public education in Ireland by estimates for £1,205,420—an increase of £76,478, of which £56,942 is to go to national schools for "principals, assistants, &c., in ordinary schools and teachers of schools paid by capitation."

SOME interesting particulars as to cost are given in the report of the L.C.C. Education Officer on Elementary Schools for the year 1907–8. In L.C.C. schools the "average" child was taught in a class of 44·8 in size; the salary of his teacher, if a master, was £154. 19s. 2d., if a mistress, £111. 16s. 2d.; his head master had a salary of £302. 7s. 9d., or his head mistress, £217. 9s. 6d. The approximate capital cost of the "place" in which the child sat was £30, which included site, building, and that part of the equipment properly chargeable to capital account. The annual maintenance cost in respect of the child's education was £6. 13s. 11d., which included the teachers' salaries, books, apparatus, cleaning, warming, lighting, school-keeper's service, structural repairs, administrative charges, enforcement of attendance, buildings and equipment, and debt charges on the capital cost of the "place" occupied. Against this was to be set £1. 18s. 4d. from the Board of Education grants for efficient instruction. The remainder, £4. 15s. 7d., came from the rates. It is worth noting that the central government and the local government contributed in the proportion of 29 per cent. and 71 per cent. respectively.

As regards the "average" child in the non-provided school, the average size of class was 37·5; and the average salary of an assistant master, £105. 13s. 3d.; of an assistant mistress, £76. 13s. 1d.; of a head master, £211. 8s. 2d.; and of a head mistress, £150. 7s. 8d. The annual maintenance cost in respect of the child's education was £4 (excluding the managers' charges in respect of the buildings). A multiplication of these figures by 505,698 for L.C.C. schools and 145,163 for non-provided schools (the respective average attendances) gives the total figures for London. The magnitude of the work of education may be gauged by the fact that the gross expenditure on elementary schools is approximately £4,000,000 per annum. The contribution by the Central Authority is approximately £1,300,000, and therefore the net expenditure from local revenue is £2,700,000.

THE following resolutions on the subject of the continued education of elementary-school pupils have been passed by the Council of the Teachers' Guild:—

(1) That in view of the educational waste which is caused by the fact that, in the case of the great bulk of the children passing through the elementary schools, education ceases at thirteen or fourteen years of age, this Council is of opinion that it is desirable that powers similar to those contained in the Scotch Education Act, 1908, should be conferred upon Local Education Authorities in England and Wales.

(2) This Council recognizes that, as a preliminary to the enforcement of compulsory attendance at continuation schools, facilities should be provided by employers, either by shortened hours of labour or by special provision during working hours.

THE fifty-third Annual Report of the Jews' College states that arrangements have been made by which post-graduate students attend criticism lessons and discussions thereon, and also a course in Pedagogy at the London Day Training College by the courtesy of Prof. Adams, Principal of the College. The Council have at the same time determined to seek opportunities at the Metropolitan Synagogue religion classes for affording these students practical experience in teaching. Another experiment that has been commenced during the year has been the award of entrance scholarships, tenable at one of the principal secondary schools. The successful scholars will be prepared for the Matriculation Examination of the University of London, at the same time continuing their studies in Hebrew and kindred subjects under the auspices of the College. Dealing with the finances of the institution, the Report says: "Despite the attention that was drawn last year to the threatening financial position that the institution occupied, but little improvement is to be recorded. The number of subscribers and total of contributions are still remarkably small, and quite incommensurate with the invaluable functions performed by the College and the important position it occupies in the communal organization. The supporters of the institution number barely two hundred; the amount subscribed by them last year was £488. 7s. 6d. In this total is included arrears from 1907. Moreover, several generous supporters of the institution have unfortunately passed away during the past twelve months. Unless a serious effort is made without delay to enlist new subscribers, the College will have either to curtail its activities or to realize some of its invested capital in order to meet current expenditure. Action in either direction would be greatly to be deplored."

PROF. C. E. VAUGHAN addressed the Yorkshire Branch of the English Association at Leeds University (March 10) on "English Prose Literature and its Place in Teaching." He remarked that English prose literature had never received the attention and admiration which was its due. We were proud, and rightly proud, to be the possessors of the finest poetic literature of modern times; for it was clear not only that the poetry of a nation must be the attractive part of its literature, but, in a sense, it was the truer representation of the nation in its imagination. They must be proud of the richness and variety of prose writers from Charles Lamb to Dickens on the one hand, and of others like Milton, Burke, and Carlyle on the other. With respect to imaginative literature, Prof. Vaughan said that nothing could be more stimulating than "Robinson Crusoe" when treated with skill by the teacher, for it struck at the very heart of their imagination and increased their powers of observation. The novels of Sir Walter Scott could also be made a great means of training the mind and imagination. Teachers were shy of reading the heavier works, and he suggested the "Essays" of Macaulay, the masterpieces of Bacon, and the speeches of Burke in order to train a lad to think clearly, to reason, and to take an interest in the great historical problems. If teachers could not make use of the enormous wealth of prose literature they had at hand, they were not worth their salt.

PROF. HARROWER presided over the spring meeting of the Classical Association of Scotland at Aberdeen (March 6). Per-

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haps, he said, there never was a time when so much uncertainty regarding the future prevailed in Scottish educational affairs. The spirit of change was everywhere. For some years the whole school education of the country had been passing through a process of remodelling, which was not yet complete, and in the University had been inaugurated the most fundamental changes in the arts curriculum that had been seen for generations. If the Universities had suffered in the past through over-devotion to outworn creeds and curricula, that was not the danger with which they were menaced at present. The pendulum was swinging very far in the other direction. It looked as if those who were entitled to take the lead in directing their destinies were alarmed lest they should drop out of the ranks in the march of reform. Experience had shown that there was no proposal, however revolutionary, however glaringly at variance with facts and common sense, that might not take shape as an ordinance if they were told persistently enough that popular opinion was steadily turning in that direction. In that dangerous readiness to lend an ear to wild suggestions of so-called reform, even on the part of men of repute in the educational world, they were called on for a double vigilance on behalf of the subjects they had most at heart. Many of them saw, rightly or wrongly, in the present policy of the Scotch Education Department an influence that menaced the interests of classical study.

Attention was directed by Prof. Harrower to some changes already accomplished or now imminent in the northern school and University system: the average age at entrance, the standard of the bursary test, and the place of Latin and Greek in the new arrangements in the arts curriculum. At present, in Aberdeen, the average age of entrance for men was in some years a little under, in others a little over, nineteen, the average for women being actually somewhat higher. His own very strong conviction was that the advance in age was neither natural nor normal for Scottish students nor in any way desirable for the Universities. For one thing, in some at least of the Universities, it had pulled down the number of men entrants, and in all of them it was more than anything responsible for a calamitous change in the ideal of the arts curriculum, a change that boded no good to studies like the classics which were essentially disinterested and non-professional in their nature. It was indeed, to a large extent, an accidental thing brought about by the unnatural pressure of the bursary competition regulations in the four Universities imposed by ordinance. The bursary competition, with its insane condition of higher standard papers in five subjects, was mainly responsible for the leap of two or even three years that had taken place on the average entrance age of twenty years ago. The present severe conditions of the bursary competition were bound to be relaxed. He had always regarded the early higher grade Greek papers in the Leaving Certificate Examination as the deadliest blow delivered to Greek in his time, so completely out of relation were they to the work done in the schools in many parts of Scotland, and so far beyond the possibilities of the average pass man. As to the place of classics in the new regulations for the arts curriculum, he said the old conception of the aim of the arts curriculum had been lost sight of or else was spoken of with contempt. He believed that very soon, by the law of oscillation, which was so well worked in educational affairs, they would have a revolt against that new order and a return to the old.

The Education Committee of the London County Council have adopted a recommendation approving the Daylight Saving Bill. The recommendation expresses the opinion that the object of the Bill is one which, from the point of view of a Local Education Authority, is worthy of all commendation, as during the summer months it would enable both children and teachers, by leaving school an hour earlier, to have the advantage of a corresponding amount of daylight during their free time at the end of the school session. The Committee decided to recommend to the Council that an open-air school to accommodate seventy-five children should be carried on at Montpelier House, Upper Holloway, from the end of the Easter holidays next to the end of October, and that the school should be one for both boys and girls.

The Annual Report of the Carnegie Trust reviews the seven years of its existence. The actual expenditure upon the scheme of endowment of post-graduate study and research (under which the assistance offered was of three kinds—scholarships, fellowships, and grants) over the past five years has been £27,754. The grants to Universities and extra-mural colleges for six years amounted to £246,374, £23,000 having been allocated to libraries, £131,644 to buildings and permanent equipment and £91,729 to teaching. The second quinquennial scheme of distribution, which opened with the current year, makes contributions of £65,250 to buildings and permanent equipment and £20,500 to libraries. At the close of the five years the resources of teaching in the four University centres will have been increased by permanent endowment amounting to £87,500, while the Trust will at the same time have afforded an annual income of about £4,150 to meet ordinary expenditure. During the period of seven academic years in which the scheme of payment of class fees has been in operation, the individual students whose fees have been paid by the Trust number 8,263, and the fees paid reach the total of £298,686. Fifty-five beneficiaries under the scheme, the Report states, have made voluntary repayment of fees paid on their behalf, amounting in all to £880. For the period of over seven years from the institution of the Trust on June 7, 1901, to September 30, 1908, the total cost of administration amounts to £18,900. This represents an average of less than £2,600 a year, somewhat over 2½ per cent. of the income. Statistics of the payment of class fees for the academic year 1907–8 give the total number of beneficiaries as 3,269, the total amount of fees paid as £43,256, and the average amount in fees paid per beneficiary as £13 4s. 8d.—an increase, as compared with the preceding academic year, of 107, £2,154, and 4s. 8d. respectively.

At a meeting of the Day Training Committee of the University College, Cardiff, Mr. Owen Edwards, Chief Inspector of Schools for Wales, made the report of his inspection of the Day Training College, which now contains 240 men and women students, all of whom had passed the Matriculation Examination and are pursuing courses with a view to obtaining a degree of the University. Mr. Edwards stated, amongst other things, that the teaching of the Welsh language to the students in the day training college is of a most satisfactory character, and that the teaching of Welsh in the day schools as well as in the evening schools in Cardiff was most successfully done. He pointed out in this connexion how the teaching of Welsh to English-speaking children by means of the direct method improves very materially the teaching of English to the same children, because the teachers learn to teach English to them also by the direct method.

The Committee of the Glasgow Local Association of the Educational Institute of Scotland, having fully considered the changes in the curriculum for students in training proposed by the various Provincial Committees, and the report thereon adopted by the Council of the Educational Institute, have submitted the following resolutions:—

(1) That, as the training of teachers is a subject of national concern, the schemes adopted by the Provincial Committees, while not necessarily uniform in detail, should be based on the same general principles. (2) That all qualified students on entering their training course should be allowed the option of attending a University or central institution. (3) That the normal duration of the course for qualified students should be at least three years. The Committee believes that the increased facilities for study for junior students are now such as to enable a large proportion of them, on the termination of their course, to qualify for attendance at a University or central institution, and that such qualified students will not profit to the full extent by any well ordered course at a University or central institution unless the period of study extends to three years. Further, in view of the limited time given to practical training in the junior student course, as compared with that of the pupil-teacher system, the Committee recognizes the necessity of greater time being given by senior students to that subject than hitherto. This is most easily attainable by the adoption of a three-years' course. (4) That qualified students should be permitted to attend two University classes during each of the two years of training. (The Committee believes that two University classes can be taken each session without over-pressure if the amount of practical training is distributed over three years and not compressed into two years.) (5) That students in the third year of training should be permitted to take two or three University classes at the discretion of the Provincial Committee; those taking three classes to be relieved of the major part of the practical work during the session and required to return for a three months' term of intensive training in the following session. (6) That students taking logic, psychology, ethics, or education as part of their University course should be relieved from attendance at such class or classes in the training centre. (7) That meantime, as a temporary provision during the transition period, students whose preliminary training has not enabled them to reach the qualifying standard for attendance at a University should be permitted to complete their course for the general certificate in two years; but, in view of the recognized

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importance of the teacher's work, the scheme of training for all primary teachers should in the near future be arranged on the basis of a three-years' course, whether such course be taken at a training centre, University, or central institution.

The Committee further state that they recognize the enormous advance in having training made compulsory for all candidates for the teaching profession, but regret the apparent intention on the part of the Joint Committee to restrict the normal course for the general certificate to two years, and strongly deprecate any policy that would tend to lessen the number of teachers graduating. In this connexion, the Committee draw attention to the method permitted by Article 17 of the Regulations, whereby a graduate can obtain the general certificate after one year's professional training.

At a meeting of Glasgow Philosophical Society, Mr. R. F. Muirhead, M.A., D.Sc., read a paper on "Some Considerations on Scottish Universities, with special reference to needed reforms." After a historical survey of Glasgow University, he referred to the Privat Docent in German and Austrian Universities as the successor to the teaching graduates of medieval times. It was somewhat strange, he said, that in the University of Adam Smith a closer monopoly of teaching should exist than anywhere else in Europe. Yet Glasgow University had shown that it could be liberal when its own monopoly was not in question. It was true that the University recognized the extra academic teacher, but it compulsorily excluded him from the use of University classrooms, many of which were "eating their heads off" during a great part of the day. Even if the regular staff of the University were sufficient in number to perform its work efficiently, there would be still strong reasons for the existence of a class of teachers having the status of the Privat Docent of the German Universities. After referring to the establishment of extra-mural teachers in the Arts Faculty, Dr. Muirhead went on to say that in the Arts Faculty, above all others, a really liberal education should be imparted. It should be a faculty in which some of the vital thinking of the nation might be transacted. It had not, like the other faculties, to regulate its examinations by the needs of any profession, and could therefore, give a lead in giving up a type of examination which doomed most of its activities to sterility; and by opening its doors to ambitious and able graduates it could not merely save them from the alternative of being "extra-mural crammers", or giving up their ambitions to study and teach, but it would enable the professors to step down from their pedestals as glorified schoolmasters and take their place as elder brothers in a band of brothers.

Mr. William Archer, writing of the Southern States of America in the *Westminster Review*, says: The hostility to negro education has lost much of its former strength. This is apparent from the case of Prof. Patterson, head of an excellent State school for negroes in Montgomery. The Professor (a title as lightly accorded in the South as Major or Colonel) is a sturdy Scot. When he first came to the South in Reconstruction days chance led him to a county in the State of Alabama where there was, indeed, already a school, but it was kept by a negro who could neither read nor write. An educator by instinct, if not by training, Mr. Patterson determined to set up a school of his own. For this misdemeanour he was twice shot at, and was finally arrested and put under a bond of 15,000 dols. to desist from teaching in that county. He went into another county, and started a school in the frame building that served as a negro church; but here the negroes themselves had to turn him out, as they were warned that if they did not the church would be burnt. These experiences only stiffened the Professor's backbone. He said: "I *will* teach—teach in Alabama—and teach negroes!" And here he is to-day, head of a fine large school in the State capital, and partially maintained by the State—a school well planned, well built, and with an excellent system of industrial training going on in various annexes in its spacious grounds. As I passed through one of the senior schoolrooms, a boy had just written on the blackboard, in a fine round hand, a quotation from a recent speech by Senator Foraker on the Brownsville affair—the affair of the negro regiment which President Roosevelt is alleged to have treated with high-handed injustice. The sentence ran: "We ask no favour for them because they are negroes, but justice for them because they are men." Evidently there is no affectation of excluding from the schoolroom the all-absorbing problem.

The death of the Rev. Richard Appleton, M.A., Master of Selwyn College, Cambridge, is very deeply regretted. Born in Liverpool in 1849, the son of the Rev. Richard Appleton, then Chaplain of Kirkdale County Gaol, he was educated at Christ's Hospital and Trinity College. In 1871 he was Sixth Wrangler, with a Second Class in the Classical Tripos; and he gained the second Chancellor's medal in classics in the same year. At Trinity College he was lecturer—first in Mathematics and afterwards in Theology, Junior Dean and Senior Dean, and Tutor. In 1894 he accepted from the Bishop of Rochester the presentation to the Vicarage of St. George's, Camberwell, the parish in which the College Mission is established, which he held till 1903. In 1904 he was presented by the College to the Vicarage of Ware, Herts, and in 1907 was elected Master of Selwyn College, Cambridge, in succession to the Dean of Ely. He was, from 1873 to 1882, Superintendent of the Jesus Lane Sunday School at Cambridge. He held the post of Examining Chaplain to three successive Bishops of Durham—Dr. Lightfoot, Dr. Westcott, and Dr. Moule. He was a man of singular simplicity of character and consistency of life. His strong and deep religious faith enabled him to exercise a lasting influence on many generations of undergraduates, both at Trinity and at Selwyn, as well as among the working population of Camberwell.

Mr. Simon Somerville Laurie, M.A., LL.D. (Aberdeen, St. Andrews, and Edinburgh), Emeritus Professor of Education in the University of Edinburgh, and Gifford Lecturer in Natural Theology at the same University in 1905–6, died in Edinburgh in his eightieth year. He was a native of Edinburgh and was educated at the Royal High School and the University of Edinburgh. His career as an educationist began with his appointment to the secretaryship to the Education Committee of the Church of Scotland. Later he became secretary to the Endowed Schools (Scotland) Commission in 1872, was honorary secretary to the Association for Promoting Secondary Education in Scotland, held for a time the office of President of the Teachers' Guild of Great Britain and Ireland, and was a corresponding member of the American National Educational Association. For many years Prof. Laurie was justly regarded as the leading educationist in Scotland. His eldest son is the well known principal of the Heriot Watt Technical College, Edinburgh.

Dr. J. Hutchison Stirling, of Edinburgh, the author of "The Secret of Hegel" (and of many other philosophical books), died in his eighty-ninth year (March 19).

UNIVERSITIES AND COLLEGES.

Oxford.

The report of the Curators of the Taylor Institution for 1908 records a steady increase in the numbers of students of modern languages. There were 905 separate entries for the year — 627 men and 278 women. Additional lectureships have been established in German and in French, and the funds required for the establishment of a professorship of the Romance Languages have now been provided. The Curators contemplate further extensions of the work of the institution this year, including a course of lectures on the social and political history of France and Germany. Three resident members of the University have contributed a sum of over £400 for the establishment of a German Seminar Library, and a further sum of £150 a year for five years for additional instruction in the German language and literature.

At a meeting, Prof. Firth in the chair, it was decided to form an Oxford University Reform Association, and a provisional committee was appointed to prepare agenda for a meeting next term. A resolution was carried to the effect that no scheme of reform would be considered satisfactory unless it provided for the reorganization of the faculties and the enlargement of their powers. It is understood that the Association will postpone any definite action until the proposals of the Chancellor have been laid before the University.

Cambridge.

(*From our own Correspondent.*)

The great battle about the poll degree has been fought and won. Now is the time to take stock of the situation. Readers of these notes will

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remember that the Syndicate originally recommended the substitution of two special examinations for the General, followed by a special as at present. The whole current of criticism was to the effect that this would ensure no adequate standard of literary or scientific knowledge; in fact, that a man who was through the Little-go could at once begin to specialize on his arrival in Cambridge, and this, too, even if his abilities were confessedly unequal to the demands of a Tripos. An alternative scheme was brought forward by the Syndicate in consequence of the debate in the Senate. The Specials were divided into nine groups, and the two specials were to be chosen from different groups. This was an alteration, though hardly an improvement, for such subjects as chemistry and physics, its obvious complement, were included in the same group. The fly-sheets were not very numerous. One of the opponents of the Syndicate went so far as to make an allusion to the *sciolococcus malevolens* of the reformers and the optimistic viridescence of the freshman prepared to specialize in two subjects before his eighteenth birthday. But a solid phalanx of anti-literary and anti-Greek residents put the issue out of doubt, and the General was doomed by a majority of nearly two to one. It is now not only possible, but easy, for the poll man to take his degree by exactly six months' work, thus leaving two and a half years for the completion of his physical education.

We have had a very pleasant and useful innovation in the routine of our Law School. The credit is due to Prof. Kenny, who has asked some distinguished jurists to deliver single lectures on their pet subjects. This term we have welcomed Mr. Pickersgill, M.P., who discoursed to us on the admissions of prisoners; Dr. Wilson, the distinguished professor from Harvard, who, fresh from his labours at the Conference on Maritime Law, gave us indications of his own views, but none as to the report of the Conference, which at the time was necessarily a secret; Mr. Herman Cohen, who discoursed on the practical working of the Court of Criminal Appeal. The experiment has been a great success and will undoubtedly be carried further.

Apropos of lectures, Dr. Sven Hedin honoured us by appearing in person to receive an honorary degree, and laid us under further obligations by delivering a most delightful lecture on his explorations in Tibet. The explorer's genial manner, happy courtesy, and ever flowing humour quite won the hearts of his audience. One had to read between the lines to grasp the difficulties and dangers undergone, for Dr. Hedin made as light of his own exploits as if he had merely walked down Bond Street.

A curious little episode has arisen in regard to Senate House Passage. For years a temporary staircase has been erected on big Congregation days to allow of better means of exit from the Senate House. It is proposed to erect permanent steps, but, as they will encroach a few feet upon the passage, some opposition has been manifested by the townspeople, though probably no one ever goes down the passage except on his way to one of the colleges. The matter will, however, in all probability, be arranged in a satisfactory manner.

The Report of the Appointments Board shows that no less than 146 men have found their spheres of usefulness, thanks to the working of this unobtrusive organization. The number of appointments made through this agency in successive years were 93, 102, 134, 136, and 146. As recommendations are made with a due sense of responsibility, it is hardly surprising that large use is being made of the machinery of the office by employers all over the kingdom as well as by those responsible for the due filling up of quasi-public appointments.

The conduct of certain members of the University at the Theatre towards the end of the term has led to the directors issuing a notice that during the vacation no undergraduates will be admitted, that the comfort of the townspeople may not be imperilled. This is a most excellent piece of advertisement, as during the vacation the usual practice is to require men to be in college by 10, so the bold front will not involve much pecuniary sacrifice.

The date of the Darwin Centenary Celebration is fixed for June 22. On that day the Chancellor will hold a reception in the Fitzwilliam Galleries, and on the following day the banquet will be held. The functions will be peculiarly interesting to Cambridge, as so many of the great scientist's family have made their home among us.

It is almost time for our country cousins to be informed of the dates of our May term festivities. The races will be held from June 9 to 12, inclusive. The Hawks' Ball is fixed for the 10th, and this usually was the opening of the gaieties. This year, however, it is rumoured that the Athenæum Club will forestall the Athletic Club, and hold their function on the 9th. The arrangement is a good one, as many people like to come up for the race week who do not care for the endless festivities which follow when the men come out of training.

It is hoped in Cambridge that our boat will not prove us false at Putney, or rather at Mortlake. Our crew is probably the most powerful ever sent out by either University.

There was interest of more than one kind (says the *Illustrated London News*) attached to a debate held the other day at the Cambridge Union on the question of whether the University ought not "immediately" to admit the women who earn degrees to receive those honours. Up to the present, though the women students of Girton and Newnham may take the same examinations as men—and, as a matter of fact, a large number of those women have gained very high honours—the University which consents thus to examine their acquirements refuses to allow them to receive the degrees that they have thus earned. The last time the matter was voted upon was in 1897, when it was decided by a large majority of the graduates not to redress this grievance; and on that occasion the undergraduates of the period demonstrated hotly against the lady students. If the recent vote at their principal debating society is a sufficient index of the view of the present generation of young men, however, they are in advance of their predecessors on this subject, as a resolution to the effect that the University ought immediately to admit women to its degrees was carried by 147 votes for to 55 against. The mover of the resolution was the son of a lady who herself came out, some twenty-three years ago, at the very head of the list in Classical Honours. The lady Senior Classic, then Miss Agnata Ramsay, married Dr. Butler, Master of Trinity, and it is their son, Mr. J. R. M. Butler, who moved the resolution in favour of giving women degrees—a charming tribute on his part to his learned mother.

London. At a meeting of the Senate (February 24) attention was drawn to the announcement which had appeared in the press that a Royal Commission had been appointed to inquire into the subject of University education in London. It was reported that the reference to the Commission had not been submitted or communicated to the University, and that the Government had, prior to the publication of the announcement, been informed that it should not be assumed, without opportunity for consultation, that the Senate would be an assenting party to any reference to a Commission in excess of, or inconsistent with, the resolution on the subject passed by them on December 2 last.

In reply to a question in the House of Commons, Mr. Runciman explained that it was thought better to make the London University Commission not representative, but judicial.

Celtic has been approved as a subject for the M.A. Degree Examination for external students, and Elementary Geology as a subject for the Matriculation Examination.

A fête will be held in the grounds of University College on July 1, 2, and 3, a bazaar having been organized by the students of the College and of the Hospital to pay off the debt (some £7,000) on the new athletic ground (of nineteen acres) at Perivale. The Duke of Connaught will perform the opening ceremony.

Leeds. At a meeting of the Senate, it was decided to hold a new diploma course for textile chemists. This course is intended to supply a thorough scientific training in the chemistry and art of dyeing and finishing in conjunction with a sound technical knowledge of the principles and practice of the various branches of textile manufacture. Students holding a University degree in Science or otherwise bringing forward satisfactory evidence of previous scientific training may, upon application, be admitted to the diploma upon a shortened period of study.

Sheffield. The Council have decided to reorganize the department of Economics and Philosophy by means of the Hunter bequest (£15,000). A chair in Economics will be established, and the department of Philosophy and Logic will be carried on under a Lecturer. The Council have also decided to appoint another Lecturer in History, who is to have special qualifications in Ecclesiastical History.

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THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Smith's Prizes: H. W. Turnbull and G. N. Watson, both of Trinity (names in alphabetical order). Powis Medal (Latin Hexameter Verse): J. R. M. Butler, Scholar of Trinity. Porson Prize (Greek Iambic Verse): F. W. Haskins, Scholar of Trinity; *proxime accessit* J. R. M. Butler. Chancellor's Medal for English Verse: D. H. Robertson, Scholar of Trinity. Allen Scholarship (Literary or Scientific Research): J. E. S. Green, B.A., Scholar of Peterhouse.

Downing.—Entrance Scholarships—Natural Sciences: G. H. Corke, Whitgift School, Croydon; H. A. Crouch, Merchant Taylors'; E. J. Selby, Rydal Mount School, Colwyn Bay; C. W. Tregenza, Truro College. Mathematics: H. E. G. Jarvis, St. Paul's. Law: C. A. Collingwood, Exeter School.

Magdalene.—Scholarships: R. H. Mayo, Perse School, £40 for Mathematics and Mechanical Sciences; A. G. Smith, Winchester, £40 for Classics; D. C. Westall, Merchant Taylors', £40 for Classics: G. Nash, Repton, £40 for History. Exhibitions: F. Ritson (Sedbergh), A. R. Kelsey (Bishop's Stortford), R. M. Williams (Hull), G. D. Barron (Berkhamsted), £30 each for Mathematics; H. M. Wigley (Dulwich), R. T. Cole (St. Paul's), £20 each for Classics; E. J. L. Grear (Mill Hill), B. Dickins (Nottingham), £20 each for History. Sizarships: C. E. Kindersley (Sedbergh) and T. N. Barstow (Aldenham).

St. John's.—Adams Memorial Prize — Mathematics: T. Clough, Scholar of the College.

DURHAM UNIVERSITY.—University Classical Scholarship: E. B. Pestle, University College. Hebrew Scholarship: W. R. G. Taylor, St. Chad's. Mathematical Scholarship: J. Moor, Bishop Hatfield Hall.

FRANCO-SCOTTISH SOCIETY BURSARIES.—60 candidates. (1) Sophia I. Younie, Edinburgh University, £30; (2) Elizabeth S. Barr, Glasgow University, £30; (3) and (4) Ruth E. Clark, Edinburgh University, and Agnes Morton, Glasgow University, £30 divided. Honourable mention: eight.

LEEDS UNIVERSITY.—Science Scholarship (Commissioners of the Exhibition of 1857), £150 a year: Miss May Sybil Leslie.

LONDON UNIVERSITY.—George Smith Studentship for 1908 (£200): A. C. Wood, internal student, University College.

OXFORD UNIVERSITY.—Hall Greek Testament Prizes—Senior: A. Grant, B.A., Trinity. *Proxime accessit:* J. Jones, B.A., Jesus. Junior: C. H. Williams, B.A., Merton. *Proxime accessit:* S. H. Hooke, Jesus. Hall-Houghton Septuagint Prizes—Senior: M. H. Segal, B.A., non-collegiate. Junior: L. Owen, Exhibitioner of St. John's. Houghton Syriac Prize: W. A. Davies, non-collegiate. Vinerian Law Scholarship: G. Johnston, Christ Church. Denyer and Johnson Theological Scholarships: Alfred E. J. Rawlinson, B.A., Corpus Christi; and Arthur Ll. Davies, B.A., Queen's. Honourable mention: Gerald B. Allen, B.A., Wadham.

All Souls.—Fellowship in Political Economy: Norman B. Dearle, M.A., formerly Hulme Scholar of Brasenose College.

Brasenose.—Junior Hulme Scholarship for Mathematics: Edgar William Verity, Bradford Grammar School. Somerset Thornhill Scholarship for Mathematics: Thomas Herbert Martin, Manchester Grammar School.

Christ Church.—Scholarship: Benjamin A. Swinden, King Edward VII.'s School, Sheffield.

Christ's.—Junior Fellowship: H. L. Ingle, B.A., Lecturer in Classics, Manchester University.

Exeter.—Scholarship in Modern History: Leslie C. Hughes, Clifton College.

Keble.—Natural Science Scholarship: A. E. Hodgkin, Repton School.

Magdalen.—Demyships in Mathematics: K. C. Goodyear, Brighton College; F. C. Walker, Church Institute School, Bolton.

Merton.—Classical Postmasterships: H. W. Howe, Eltham College, Kent; F. R. Baldock, St. Paul's. Classical Exhibition: G. E. Meugens, Eton.

Pembroke.—Abingdon Scholarship: G. H. G. Shepherd, Royse's School, Abingdon. Scholarship on the Foundation of King Charles I.: H. N. Parker, Elizabeth College, Guernsey.

Selwyn.—Scholarships: E. L. Mellersh, Berkhamsted School, £40 for Mathematics; J. C. Lucas, King Edward's School, Birmingham, £30 for Classics; R. E. Pond, St. Olave's Grammar School, £30 for Classics: R. T. Raine, North-Eastern County School, Barnard Castle, £30 for Natural Sciences. Exhibitions of £20—For Mathematics: L. W. Berrow, St. Olave's Grammar School; J. A. S. Castlehow, Loughborough Grammar School; J. B. Harris, Devon County School. For Classics: P. E. King, Dulwich College; R. F. S. Parry, St. John's School, Leatherhead. For Natural Sciences: A. F. R. Evans, Ipswich School.

University.—Exhibition: James Hunter, Wakefield Grammar School.

Worcester.—Mathematical Scholarship on the Eaton Foundation (open *pro hac vice*): Frederick Spriggs Thomas, Haverfordwest Grammar School. Mathematical Exhibition: Lewis Silkin, Central Foundation School and East London College.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on March 13. Present: Sir Philip Magnus, President, in the chair; Dr. Armitage-Smith, Mr. Bain, Mr. Barlet, Mr. Brown, Mr. E. A. Butler, Mr. Charles, Miss Dawes, Mr. Eagles, Miss Jebb, Dr. Maples, Mr. Marx, Mr. Millar-Inglis, Dr. Moody, Mr. Pendlebury, Mr. Pinches, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Professional Preliminary Examination had been held on March 2 to 4, and had been attended by 329 candidates. He reported that an Examination for Certificates of Ability to Teach had been held on February 26, and the thanks of the Council were voted to the Head Master of the Central Foundation School, Cowper Street, for affording facilities for holding the Examination at that school.

The representatives of the College on the Federal Council gave a verbal report of the steps which had been taken by the Federal Council, acting in conjunction with the Committee convened by Dr. Gow, in order to meet the objections of the Board of Education to proposals for the constitution of a Teachers' Registration Council which had been submitted to the Board. It was resolved:—

> That the College representatives on the Federal Council be authorized to accept the following proposals:—(1) The Scheme for a Registration Council, proposed on February 29, 1908, might be amended by adding to the Council one representative of art teachers and one of music teachers. (2) Teachers of special subjects should, if they desire registration, form Advisory Committees, and the Order in Council constituting the Registration Council should contain a clause requiring the Registration Council to take the opinion of the Advisory Committees and to allow a representative of each of such Committees to be heard before deciding on the conditions of registration for teachers of special subjects.

An interim report of the Special Committee to consider "whether by any methods the work and usefulness of the College may be increased" was submitted.

The following persons were elected members of the College:—

Mr. C. E. Ayres, L.C.P., 3 Dorville Road, Hammersmith, W.
Miss M. A. Farrow, L.C.P., 6 Regent Street, Nottingham.
Mr. G. H. Goodfellow, L.C.P., 103 Bedford Hill, Balham, S.W.
Mr. F. W. Towle, B.A. Lond., L.C.P., 106 Vicarage Road, Langley, near Birmingham.
Mr. F. G. Witts, B.A. Lond., A.C.P., 5 Turle Mansions, Turle Road, Tollington Park, N.

The following books had been presented to the Library since the last meeting of the Council:—

By the GENERAL MEDICAL COUNCIL.—Medical Register, 1909; Dentists' Register, 1909; Minutes of the Medical Council, Vol. XLV., 1908; General Index to the Minutes of the Medical Council, 1903-8.

By the SMITHSONIAN INSTITUTION.—Annual Report of the Smithsonian Institution, 1907.

By A. & C. BLACK.—Flux's Scott's Legend of Montrose ("Sir Walter Scott" Continuous Reader).

By BLACKIE & SON.—Blackie's English Texts (Macaulay's John Hampden, and War of the Spanish Succession); Macgillivray's Our Native Land; Michell's Mérimée's Tamango.

By J. MURRAY.—Brackenbury's The Teaching of Grammar; Jones's Primer of Ethics.

By the OXFORD UNIVERSITY PRESS.—George and Leigh's Selected Poems of Matthew Arnold; Holden's Pope's Rape of the Lock; Plaisted's The Early Education of Children.

By RIVINGTONS.—Rivingtons' Direct Method Elementary German Texts (Gerstäcker's John Wells, and Riehl's Der Dachs auf Lichtmess).

PROFESSIONAL PRELIMINARY EXAMINATION.

MARCH, 1909.

THE Professional Preliminary Examination was held on the 2nd, 3rd, and 4th of March, in London, and at nine other local centres—viz., Birmingham, Bristol, Cardiff, Edinburgh, Inverness, Leeds, Liverpool, Manchester, Newcastle-on-Tyne. The following candidates obtained Certificates:—

First Class [or Senior].

Pass Division.

Cregan, H. Q.	Harding, G. D. *l.gr.*	Lichtenstein, L. M. *ch.*
Graddon, J. C. *g.*	Koch, A. H.	Walsh, T. C.

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Second Class [or Junior].

Honours Division.

Barnes, F. G. L. *al.*
Blake, P. *al.*
Dimock, J. D. *g.f.*
Hicks, C. L. *a.al.*
Hollington, J. J. L.
Neely, W. G. S. *al.f.*
Saw, N. H. W. *al.*

Pass Division.

Ambler, R.
Baker, Miss F. E. B.
Bickerton, C. M.
Bramley-Moore, W. E.
Briggs, N.
Brookes, N. E.
Buckley, H. H.
Burge, G. H. K.
Carter-Braine, J. F.
Catford, E.
Childs, Miss W. M. *a.al.*
Clements, P. A. *al.*
Cohen, L. C. *a.*
Cotton, C. W.
Crossley-Meates, B.
Crowe, A. A. R.
Curnock, D. R.
Cutting, J. A. W.
Dadley, O. N.
Dann, Miss D. P.
Dixon, C. C.
Drake, H.
Ellam, H. J.
Flint, P.
Forrest, L. W.
Gabbott, J. B.
Garrard, J. L.
Hall, R. F. G.
Halstead, D. V. *f.*
Hamilton, M. St. C.
Hardy, E. A.
Kettlewell, N. H.
Klosz, R. L.
Laborda, F. E. R.
Lakin, C. W.
Langdon, G. M.
Lennon Brown, A. G.
Lewis, E. C.
Ludolf, H. G.
Maelzer, N. H. S.
Masters, W.
Millett, H.
Milnes, Miss I.
Mulliner, N.
Naylor, F.
Nutting, H. M.
Ord, G.
Parry, J. M.
Pope, C. L.
Proud, W. J.
Richards, L. P.
Ritchie, R. J. H.
Sai.
Seville, C. H.
Siddons, B. L. *al.*
Stevens, S.
Sturridge, M. H. G.
Sykes, F.
Tatton, G. P.
Thompson, E.
Veitch, J. R.
Ward, E.
Welton, F. E.
White, H. B. H.
Wood, D.
Wright, H. S.

N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively :—

a. = Arithmetic.
al. = Algebra.
ch. = Chemistry.
f. = French.
g. = Geography.
gr. = Greek.
l. = Latin.

PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of successful candidates at the Examination held in February, 1909 :—

Class I.

Wallis, T. E.

Class II.

Bennison, T. M.
Denne, E. J.
Haskew, F.
Jones, H.

CERTIFICATE EXAMINATION, December, 1908.

ADDITION TO CLASS LIST.

First Class (or Senior).—Pass Division.

Girl.

Trotter, L. M. W., Liverpool College, Huyton, Liverpool.

The above candidate passed with distinction in Scripture History, English Language, and Domestic Economy.

CONFÉRENCES FRANÇAISES.

Société Nationale des Professeurs de Français.

UNE FEMME DU SECOND EMPIRE.

Par Mlle Th. de Mayol de Lupé.

En dépit de la multiplicité des "Sociétés Françaises" qui se sont fondées ces dernières années dans la métropole, les conférences instituées par la Société des Professeurs, avec la gracieuse sanction des autorités du "College of Preceptors," ne perdent rien de leur attrayance, et sont assidûment fréquentées par un public nombreux et choisi, friand de langue française et de saine littérature.

Le 27 février dernier, la belle salle du Collège était comble ; Mlle de Lupé nous parlait d' "Une Femme du Second Empire," la comtesse de Castiglione, qui brilla à la Cour du plus haut éclat, tant par sa beauté que par son esprit.

Mlle de Lupé est une conférencière de race dont la voix chaude, souple et bien timbrée, le débit facile, l'esprit sémillant, la phrase alerte, donnaient au sujet choisi un charme particulier.

Et ce n'était point de trop de toutes ces qualités maîtresses pour bien peindre cette Cour fastueuse, gaie et spirituelle, au milieu de laquelle trônait l'Impératrice Eugénie, et où passait, rêveuse, pour ainsi dire mystique, la froide et sombre figure de Napoléon III.

La conférencière a fait revivre devant nous, avec un relief saisissant, les personnages marquants de cette époque, les groupant artistement autour de cette belle comtesse italienne qui, dès son entrée dans cette Cour, où se pressaient tant de grâce et de beauté, en fut acclamée la reine. Qu'était-elle venue faire à Paris, cette belle créature? S'y faire admirer? Dans ce cas elle y réussit pleinement, plus belle que les plus belles, les éclipsant par son luxe, et ne recueillant partout qu'hommages et admiration. Avait-elle quelque mission secrète confiée à sa finesse diplomatique innée? *Che lo sa!* Mais c'était l'époque où Cavour rêvait l'unité italienne, rêve qui ne semblait pouvoir s'accomplir qu'avec la coopération de la France. Envelopper l'Empereur, arriver à obtenir de lui quelque chose de plus tangible que des promesses, tel pouvait bien être le but que se proposait le patriotique diplomate. Qui veut la fin veut les moyens! Une femme pouvait seule obtenir ce résultat. L'intrigante Italienne fut envoyée à Paris, et elle sut attirer à elle et captiver l'Empereur.

Là se place l'attentat d'Orsini. Napoléon comprit que l'Italie lui était hostile. Il se sentit en danger. En habile diplomate, la comtesse lui fit entendre qu'il n'y avait qu'un moyen d'y échapper, lequel était d'aider à créer l'unité italienne. Orsini était devenu un héros. Sa mort, contre laquelle Mme de Castiglione s'était violemment élevée, n'arrêta pas les conspirations, ni ne mit non plus fin aux rendez-vous secrets avec l'Empereur. Mais, l'influence acquise se perdait, la confiance n'y était plus, car, comme le fait observer la conférencière, "sait-on jamais la vérité dans ce que dit une femme?" Un jour, étant chez la comtesse, l'Empereur n'échappa à la mort que grâce à la vigilance de sa police qui veillait sur lui jour et nuit. Ce drame sanglant, Mlle de Lupé nous l'a retracé dans toute sa poignante actualité. Le lendemain Mme de Castiglione quittait Paris. Ses dernières années se passèrent dans l'éloignement et l'obscurité.

Néanmoins la diplomatie italienne avait triomphé, et, en 1859, la France déclarait la guerre à l'Autriche, premier pas vers cette unité italienne qui tenait tant à cœur à Cavour et à son souverain, et qu'il leur fut donné de voir enfin se réaliser.

Cette conférence, écoutée d'un bout à l'autre avec la plus grande attention, a été fort applaudie, et M. Couillault, qui était au fauteuil, en remerciant, en termes choisis, Mlle de Lupé, a fidèlement traduit les sentiments de l'auditoire.

SIMPLIFICATION OF GRAMMATICAL TERMINOLOGY.

On behalf of the Joint Committee, promoted by the Classical Association for the simplification of grammatical terminology, Prof. Sonnenschein, the Chairman, and Prof. Conway, the Honorary Secretary, have circulated the following appeal for information :—

A Joint Committee of scholars and teachers has been summoned on the invitation of the Council of the Classical Association to consider the terminology used in teaching the languages, ancient and modern, including English, commonly studied in English schools, in the hope of framing some simplified and consistent scheme of grammatical nomenclature, tending in the direction of uniformity for the languages concerned.

At a preliminary meeting of the Joint Committee held in London, on February 27, it was resolved to make the project known as widely as possible, and to invite the co-operation of the general body of teachers of these languages in this country; and it seemed well to ascertain at the outset what points of current grammatical usage were found, in actual practice, to be causing ambiguity, confusion, or other difficulty in the minds of English pupils of any age. The Committee have therefore instructed us to ask if you would be so good as to furnish it with information as to what terms used in modern text-books you have found unserviceable or less serviceable than others used to denote the same thing. The value of the information would be increased (1) if you would refer to the particular grammar or other text-book in which the term or terms are found in use; (2) if you would distinguish (*a*) terms open to practical objections on the score of obscurity or inadequacy in representing the usage of any one particular language considered alone, and

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(*b*) terms which, though not giving rise to difficulties within the study of one language, appear nevertheless to be inconsistent with those used to describe the same thing in other languages.

It would be a great convenience to the Committee in considering the answers (3) if separate points were, as far as possible, written briefly and on separate sheets.

The points would probably fall under one or other of the following heads :—

(i.) General grammatical concepts and names of the parts of speech, as *predicate*, *article*.

(ii.) Names of cases, tenses, moods, and other parts of accidence.

(iii.) Terms used in describing different types of sentence, different parts of a sentence, or common syntactical constructions—as *indirect speech* (*oratio obliqua*), or different types of conditional sentences.

(iv.) Terms of prosody, as *beat*, *ictus*, *arsis*.

(v.) Terms of phonetics, as *hard*, *lenis*, *aspirate*.

Answers to this circular should be sent, if possible, not later than April 13, to E. L. Milner-Barry, Littledean, Berkhamsted, who has kindly undertaken to act as Hon. Secretary of the Inquiry Sub-Committee.

Unless any wish is expressed to the contrary, the answers to this circular will be laid directly before the Joint Committee; but in any case in which it may be desired, the answer will be treated as confidential as far as its signature is concerned.

Dr. A. W. Ward writes to the *Athenæum* (March 27) an appreciative acknowledgment of the services of the work of the late Mr. F. G. Fleay to English literature, and to English dramatic literature in particular. "Beyond all doubt," he says, "conjecture and conclusion jostled each other in some of his writings; and not a little that he at one time pronounced to be settled he was himself at another time ready to resettle. But the debt which is permanently due to him from students of the Elizabethan drama, and of Shakespeare in especial, is not only on account of the methods of inquiry which, though not actually originated by him, he elaborated with extraordinary acumen and unsurpassed patience in fields so different as that of metrical criticism and that of stage history. His 'Life of Shakespeare,' his 'Chronicle of the English Stage,' and his 'Biographical Chronicle of the English Drama,' are monuments of a literary and historical learning both rare and minute, as well as of a courage in investigation hardly possible except to a mind gifted—I am not afraid of using the word—with genuine imaginative power."

CORRESPONDENCE.

THE MORAL EDUCATION LEAGUE.

Referring to the debate in the House of Commons (March 16) upon the motion of Mr. George Gooch, seconded by Sir William Collins, on the subject of "Moral Instruction in Elementary Schools," Mr. Harrold Johnson, Secretary to the Moral Education League, complains of "the inaccurate conception of the aims and work of this organization expressed by several Unionist members in the course of the debate." He writes :—

"The apprehension seems to have been entertained by some of those who took part in the debate that at the back of the work of the League there is an *arrière pensée* of hostility to religious instruction, and a desire that ultimately this may be superseded by the particular instruction the League supplies. No such conclusion could have been inferred from the speeches of the opener and seconder, who are Vice-Presidents of the League; nor has it any basis in fact. The League works, it is true, on non-theological lines, regarding questions of supernatural sanctions and relationships as outside its scope. It acts thus, however, not in any sectarian spirit, but, on the contrary, from the very catholicity of its interests.

"The Churches and the League have this much in common—that both are convinced that what, above all else, is essential for an efficient moral education is the religious spirit, in the sense, at least, in which this spirit may be defined as being one which recognizes the supreme value and power of moral ideas. This recognition the League would secure by endeavouring to make whatsoever things are 'lovely and of good report' so attractive to the children, by means of apt narrative and incident within the child's own circle of experience, that they are instinctively drawn to adopt a right attitude toward life and to respond to the highest claims. That the League's work is of this nature I think every one must admit who is familiar with its books or has heard any of the public moral lessons given under its auspices."

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CURRENT EVENTS.

Fixtures.

AT the meeting of Members of the College of Preceptors to take place on Wednesday, April 21, there will be a discussion on "The Relations between Head Masters and Assistant Masters." The discussion will be opened by W. J. Addis, Esq., M.A.

* * *

M. J. DUHAMEL, L. ès L., will address the Société Nationale des Professeurs de Français en Angleterre at the College of Preceptors on April 24, at 4 p.m., on "Choses et Autres sur l'Angleterre."

* * *

UNDER the auspices of the Executive Committee of the National Service League, the Rev. Prebendary Russell Wakefield, Chairman of the Central Unemployed Body, will deliver an address on "The Moral and Educational Aspects of National Service"—that is, of "universal military training for home defence"—at the Caxton Hall, Westminster, on April 2, at 5.30 p.m.

* * *

THE Board of Education has just published a list of thirty holiday courses which will be held on the Continent at different times during the present year, but mostly in the summer months. Seven of the courses are in German-speaking countries—viz., at Greifswald, Jena, Marburg, Neuwied, Lübeck, Kaiserslautern, and Salzburg; three in French Switzerland—at Geneva, Lausanne, and Neuchâtel; one in Spain—at Santander; one in Italy—at Florence; and the rest in France—at Besançon, Dijon, Grenoble, Nancy, Boulogne-sur-Mer, St. Servan, St. Malo, Paris, Versailles, St. Valéry-sur-Somme, Tours, Honfleur, Bayeux, Granville, Caen, Lisieux, and Villerville. The table published by the Board of Education gives the date of each course, the fees, return fares from London, lowest cost of boarding, principal subjects of instruction, address of Local Secretary, and other details of importance to intending students. Copies of the table (price 2d.) can be obtained direct from Messrs. Wyman & Sons, Ltd., Fetter Lane, London, E.C., or through any bookseller.

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CAMBRIDGE UNIVERSITY has conferred the honorary degree of LL.D. upon Dr. Charles Gore, Bishop of Birmingham; Sc.D. upon Sven A. Hedin, Ph.D.; M.A. upon John Wood Oman, D.Phil. Edin., and Owen C. Whitehouse, M.A. Lond., Hon. D.D. Aberd.

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THE University of Aberdeen has resolved to confer the following honorary degrees:—

D.D.—Rev. David S. Cairns, M.A. Edin., Professor of Dogmatics and Apologetics, U.F. Church College, Aberdeen; Rev. James R. Leslie, M.A. Aberd., Principal of the Episcopal Training College, Edinburgh; Rev. John Scott Lidgett, M.A. Lond., Warden of Bermondsey Settlement.

LL.D.—Allan R. Andrew, M.A. Aberd., Chief Inspector of Schools in Scotland; Alexander Bruce, M.A. Aberd., M.D. Edin., Edinburgh; Donald Crawford, K.C., Sheriff of Aberdeen, Kincardine, and Banff; Frederic Harrison; James Pittendrigh MacGillivray, R.S.A.; Paul Sabatier.

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THE REV. DR. A. J. MASON, Master of Pembroke College, Cambridge, and Vice-Chancellor of the University, has been elected to an Honorary Fellowship at Jesus College.

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PROF. HENRY JONES, on behalf of a committee, appeals for funds towards a permanent memorial of the late Dr. Edward Caird in the University of Glasgow—to place an inscribed tablet or medallion in the Moral Philosophy Classroom, and to supplement the endowment of the Lectureship in Political Philosophy.

Endowments and Benefactions.

THE directors of Krupp's Works at Essen have made an annual grant of 10,000 marks (£500) for the Aeronautic Professorship at Göttingen University, to be devoted to research work connected with aeronautics.

* * *

MR. C. A. FOSTER has given £1,000, and Mrs. Rawlings a second £1,000, towards the intended new Archæological Museum, Cambridge. The Foster family have now subscribed £6,000, in memory of Mr. W. K. Foster.

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BY the will of the late Mrs. C. F. Thompson, of Grantham, formerly of Leeds, a contingent reversion of some £30,000 has been left to Leeds University.

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A PORTRAIT in oils of the late Sir John Barran, by Miss Violet Garrard (after the portrait by the late Mr. Frank Holl, R.A.), has been presented to Leeds University by Mr. Rowland H. Barran, M.P.

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MR. JAMES NEALE, architect, has left £1,000 to the Royal Institution of British Architects for a travelling studentship or for such other purposes as the Institution may decide.

* * *

CARDIFF UNIVERSITY COLLEGE wants £35,000 to clear off the debt on the new buildings. Mr. Austin Jenkins, the Registrar, is organizing the quest for funds.

THE personal estate of the late Dr. Thomas M'Kie, valued at some £80,000, will fall to the University of Edinburgh on the death of Mrs. M'Kie.

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THE balance of receipts for the memorial to Mrs. Oliphant in St. Giles's Cathedral, Edinburgh, has been handed over to the University Court of St. Andrews to found an annual prize of £10 in English Literature.

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DR. WILLIAM DEY, late Rector of the Old Aberdeen Grammar School, and now a member of the University Court, has intimated the intention of himself and his brothers to found a Scholarship in Education in the University of Aberdeen, of the annual value of £100, in memory of their father.

* * *

MR. R. HAY FENTON, London, a native of Aberdeen, has presented to Aberdeen University a very fine collection of British birds' eggs—upwards of 7,000 specimens, including an egg of the great auk. "Let me express the hope," says Mr. Fenton, "that this gift may be the means of stimulating Aberdonians at home and abroad, and especially graduates, to take an interest in, and contribute specimens to, the Natural History Museum, where, as a boy, I spent many a profitable and pleasant Saturday afternoon in the company of my father."

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THE late Mr. M. G. Megaw has left £1,000 to found, in the Queen's University of Belfast, a scholarship tenable for one year by a son of a *bona fide* farmer farming land in Ulster, and of any Christian denomination, and under the age of twenty-one.

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THE Goldsmiths' Company has renewed for a further period of three years its annual grant of £5,000 towards the maintenance of Goldsmiths' College, New Cross.

* * *

THE Royal Geographical Society has renewed for a further period of five years its annual grant of £400 to the Oxford School of Geography.

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THE Glasgow and West of Scotland Technical College has received a grant of £10,000 from Mr. James Dick's Trust, to be applied to the training of sons and daughters of members of the poorer classes, "so that they may become useful artisans and citizens."

* * *

BRYN MAWR COLLEGE, Pennsylvania, has established five free scholarships for five German women University graduates.

Scholarships and Prizes.

SEVEN Cambridge Colleges—Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel—will hold a combined examination for sixty-seven entrance scholarships and a number of exhibitions on December 7 and following days. Subjects: Mathematics, Classics, and Natural Sciences, at all the colleges; History, at all except Pembroke; Modern Languages, at all except Pembroke and Jesus; Hebrew, at Gonville and Caius and St. John's. Age not over nineteen on October 1. Forms of application from W. S. Hadley, M.A., Pembroke; the Master, Gonville and Caius; W. H. Macaulay, M.A., King's; A. Gray, M.A., Jesus; Rev. J. W. Cartmell, M.A., Christ's; the Master, St. John's; the Master, Emmanuel. Forms to be returned (with copy of register of applicant's birth and certificate of good conduct) by November 30.

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EMMANUEL COLLEGE, Cambridge, offers (in October) an exhibition, £50 a year for two years, to an advanced student commencing residence as a member of the College in October next. Apply to the Master by October 1.

* * *

QUEEN'S COLLEGE, Oxford, offers (June 1) one open scholarship, £80 a year for four years; and one exhibition, £70 for seven years, open to natives of Middlesex. Examination in Classics. No age limit. Apply to the Provost at any time between May 18 and 25.

* * *

PEMBROKE COLLEGE, Oxford, offers (on May 11) six open scholarships—one of £100 a year, one of £90, and four of £80. Three (including the first two) are for Classics, two for Modern History, the sixth for either subject. Entry forms from the Master.

* * *

ST. JOHN'S COLLEGE, Oxford, offers (June 15) a Dean Mansell Exhibition in Divinity and Hebrew of £40 a year. Candidates (who must be members of the Church of England or of a Church in full communion with it) must send in their names to the Resident of St. John's College before June 1. Further information from the Senior Tutor.

* * *

THE London Inter-Collegiate Scholarships Board will hold a combined examination for twenty entrance scholarships and exhibitions, tenable at University College, King's College, and the East London College, on May 11 and following days. No candidates will be admitted to the examination unless they have passed the London University Matriculation or an equivalent examination and are under the age of nineteen on May 1, 1909. The total value of scholarships offered is about £1,500. Full particulars and forms of entry may be obtained from the Secretary of the Board, Mr. Alfred E. G. Attoe, University College, Gower Street, W.C.

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IN connexion with the forthcoming celebration of the five hundredth anniversary of the foundation of the University of St. Andrews, the first institution of University teaching in Scotland, Dr. Peddie Steel, of Florence, has offered to award a prize of 100 guineas for the best essay on Scotland's debt of gratitude to her parish schools, her grammar schools, and her Universities.

Appointments and Vacancies.

ON the nomination of M. Doumergue, French Minister of Education, the Abbé Loisy has been appointed to the Chair of the History of Religions in the Collège de France, vacant by the death of M. Réville. M. Loisy was the candidate of the Collège presented by the faculty. M. Georges Foucart, Assistant Professor in the University of Aix, was the candidate of the Institute of France, which, however, gave M. Loisy 17 votes against 20 for M. Foucart.

* * *

THE London University Extension Board are about to revise the Panel of School Inspectors and Examiners, and make, if necessary, recommendations to the Senate for additions to it. They will be prepared to receive applications from graduates desiring to be placed upon the Panel, and forms on which applications may be made (together with a further explanation of the nature and conditions of the work) may be obtained from the Registrar.

* * *

THE London University Extension Board are about to revise the Panel and Supplementary List of University Extension Lecturers, and to make, if necessary, recommendations for additions to them. They will be prepared to receive and consider applications from graduates desiring to lecture, and forms on which application should be made may be obtained from the Registrar. Applicants should have made a special study of the branch of knowledge upon which they desire to lecture, and should have had experience in lecturing to such audiences as usually attend University Extension Lectures.

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PROF. THOMAS PURDIE, LL.D., will retire from the Chair of Chemistry in the United College, St. Andrews, at the end of the summer session.

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PROF. KIRKPATRICK has resigned the Chair of Constitutional Law and History in the University of Edinburgh, after twenty-eight years' service.

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PROF. VICTOR KASTNER, B. ès L., M.A., has resigned the Chair of French in Manchester University.

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MR. H. B. WALLIS, B.A., has resigned the Assistant Lectureship in Philosophy in Manchester University, on appointment to a post under the Board of Education.

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THE Mastership of Selwyn College is vacant through the lamented death of the Rev. Richard Appleton, M.A., Fellow of Trinity College, Cambridge, and Hon. Canon of Durham.

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MR. E. C. QUIGGIN, M.A., has been appointed to the new Monro Lectureship in Celtic at Caius College, Cambridge.

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THE REV. THOMAS REES, M.A. Lond., Vice-Principal of Brecon Memorial College, has been appointed Principal of the Bala-Bangor Welsh Congregational College.

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THE REV. F. C. N. HICKS, M.A., Tutor of Keble College and Examining Chaplain to the Bishop of Oxford, has been appointed Principal of Bishop's College, Cheshunt, which is to be opened in October as a theological training college.

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DR. JOHN MARSHALL will retire from the Rectorship of the High School, Edinburgh, at the end of the current session. He has held the post since 1882.

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MISS JEX-BLAKE, Head Mistress of St. Margaret's School, Polmont (since 1899), has been appointed to succeed Miss Wordsworth as Principal of Lady Margaret Hall, Oxford. Miss Jex-Blake is a daughter of the Dean of Wells.

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MR. IVOR B. JOHN, M.A., B.Sc. Lond., Senior Lecturer and Deputy Vice-Principal of the Goldsmiths' College, has been appointed Principal of the new Dudley Training College.

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THE REV. A. W. COMPTON, M.A. Cantab., has been appointed Warden of the Hadfield Memorial Hostel, Wellington, N.Z.

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THE REV. S. B. CRISTON, M.A. Cantab., Curate of St. John's, Walham Green, has been appointed Assistant Master and Chaplain of the Diocesan College School, Rondebosch, Cape Colony.

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THE Head Mastership of Coleshill Grammar School is vacant.

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THE Head Mastership of St. John's Foundation School, Leatherhead, will be vacant in August.

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MR. H. B. TRISTRAM, M.A. Oxon., late Head Master of Loretto, has been appointed Assistant Master and House Master at St. Paul's School.

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MR. L. MARGERISON, Head Master of St. Paul's (Church of England) School, Chester, has been appointed Head Master of the new Council Higher Grade School, Chester.

Literary Items.

THE *Educational Review* (New York; edited by Dr. Nicholas Murray Butler) reprints in its March number, from the *Teachers' Guild Quarterly* (December last), Mr. A. C. Benson's Presidential Address to the Guild on "The Personality of the Teacher."

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MR. FROWDE announces "A Vindication of Warren Hastings," based mainly on State papers, by Mr. G. W. Hastings.

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MESSRS. RIVINGTON will publish this month the first two Parts of "Notes on British History," intended "to supplement the information given in the text-book and to lessen the amount of time devoted in school to the mere giving of notes." A third Part (1660–1815) is in preparation.

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MR. HOPE MONCRIEFF is supplementing his charming volumes on "Bonnie Scotland" and "The Highlands and Islands," in Messrs. Black's Series of Colour Books, by another entitled "The Heart of Scotland"—that is, Perthshire and its borders. The illustrations, which are by Mr. Sutton Palmer, will mostly be drawn from "Bonnie Scotland."

General.

AT the Annual General Meeting of the Teachers' Training Association (March 13), Prof. J. W. Adamson was elected President for the ensuing year. Vice-Presidents are Mr. Oscar Browning, Mr. W. M. Keatinge, and Miss L. Brackenbury.

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THROUGHOUT England and Wales in 1907 and 1908, while the number of Council schools increased by 426, the number of Voluntary schools decreased by 337.

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THE Government has appointed a Committee (Lord Elgin, Chairman) to inquire into the needs of the Scottish Universities.

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THE Queensland Government announces that it proposes to establish a University during the present year.

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M. JACQUES BARDOUX has founded an association to group together all Frenchmen in Paris who have been educated at British Universities or in British public schools. The object is to reunite men of intelligence and energy, "who, faithful to the memory of the lessons they have received, desire to propagate the benefits they have received in the world of ideas"; and "to create a centre where, in a certain measure, those who have profited by British hospitality can do something towards paying off the debt of gratitude which they owe to members of British Universities passing through Paris."

THE EDUCATIONAL VALUE OF PLAY.

AT the Evening Meeting of the members of the College of Preceptors on Thursday, March 25, Mr. R. F. CHARLES, M.A., in the chair (in the absence of Mrs. HUMPHRY WARD, who was unfortunately indisposed), J. L. PATON, Esq., M.A., read the following paper:—

The centenary of John Milton has turned our attention afresh to the study of his character. His childhood has a special interest for us nowadays, because he was, as more than 75 per cent. of our own children are, born and brought up in the city.

Nothing but music seems to have redeemed that childhood from utter sombreness. It was a childhood without games. In "Paradise Regained," he says:

> When I was yet a child, no childish play
> To me was pleasing; all my mind was set
> Serious to learn and know, and thence to do
> What might be public good.

And his biographer tells us how from the age of twelve he never went to bed before midnight, and one of the maids was told off to sit up with the strenuous young student. It was this overstrain of early days which cost the poet his eyesight in later years—a loss which he turned to glorious gain. But was the loss of his eyes the only detriment he suffered? Far be it from me to belittle the greatness of Milton. On the contrary, I have such faith in his real greatness that I have no fear of any deductions truth may make from it. Great men are given us that we may learn from their defects as well as from their achievements. Do we not feel that there was something lacking to the wholeness of the man in John Milton? Did not Mary Powell and his daughters feel it in their day—a lack of human kindness, and that sensibility which can put itself in another's place, and make allowances for others because it looks at things from that other person's point of view and feels as he or she feels—a lack of the playful, sportive touch, that hearty and good-humoured laugh which oils the wheels of life and carries us without colliding round some of its awkwardest corners? Did not those who lived their daily day with him feel that there was a little too much—I will not say of sternness, still less sourness; for, after all, he would sing when the fit of the gout came on him—but too much settled fixity of mood, too much of that "mind set serious to learn and know"? And when we read the autobiography of his young Quaker amanuensis, who took himself so extremely seriously, do we not see there the same flaw more pronounced and own to a certain fellow-feeling for the father who would knock off the hat which Ellwood persisted in wearing in his presence?

"All work and no play," we say, "makes Jack a dull boy." But that is only half of the mischief, and perhaps not the more serious half. It is not dullness we see in John Milton; it is failure in that art for which we have no special name, though it is one of those which count for most in this workaday world—the art of living with others. The tractate on "Education" shows the same defect. Sports of all kinds are admitted, as they are by Thomas Elyot and all the educational writers of the Renaissance; but their aim is with Milton, as with his predecessors, strictly utilitarian, to develop strength of body, to teach the arts of warfare, and to realize, what was, after all, to Milton, spite of all his Puritanism, the ideal, the life of the great Romans and Greeks who kept the bridge of old, and swam the Tiber, and hunted the wild boar in Elis, and wrestled on the yellow sand, and tossed the quoit, and ran with the tidings of victory from Marathon to Athens. Strictly speaking, there is no more play in the tractate than there is in an English public school. There is no spontaneity; there is no room for it. All the exercises are prescribed, all are compulsory, and you will find no child so dull and deadened, so lacking in initiative and agility, as the child for whom every single activity has been prescribed by superior authority from the nursery onwards, however sage the prescribing authority may be.

It is most instructive to set side by side with the childhood of Milton the childhood of that other great man, so different from him, whose centenary came two months later, Abraham Lincoln. His was a childhood which never received more than a single year's formal tuition in all, and that in irregular doses from teachers who knew hardly anything themselves beyond the "three R's"—a childhood on

> The good old rule, the simple plan,
> When wild in woods the noble savage ran.

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But what amazing agility and versatility of mind! How rapidly he takes up one thing after another—rail-splitter, store-keeper, postman, surveyor, wrestling champion, legislator, lawyer, inventor, orator, leader of his nation, *generalissimo* of the forces. All of them came, I will not say easily, but naturally, to him, for he "sees nothing to the contrary." And, above all, spite of his awkwardness and his clothes, which were "never much to look at," and his top-hat, which was practically coeval with himself, was there ever a man who possessed in a more eminent degree the art of living with others? Yet few men have been tried as he was. Did ever a political leader have more impossible colleagues than Seward and Stanton? Did ever a statesman confront a crisis more crucial in its character and huge in its dimensions than Abraham Lincoln confronted when he was elected President of the United States? Did ever a leader live through a more harassing period of conflict and of strain? But he drove his team; there were no resignations. He went through that period of harassment "without uttering one word of violence or rancour, one phrase which, after the cessation of hostilities, might return to embitter the defeated combatants or be resented by their descendants." And his crowning glory is that he not only re-united America, but made subsequent co-operation and fellowship possible for both North and South on terms of mutual respect and affection. How unlike Cromwell! What a contrast to the sequel of our own Civil War!

It is well for us to dwell on these things and draw out this contrast. It is full of significance, if we have eyes to see. There is nothing so salutary for us to consider as the folly of educators and the consequences of that folly. It is history, as Bacon says, which makes us wise. But, some one will say, there is no fear of our banishing play nowadays from childhood; Froebel has taught us better. I wish this objector could see some of the infant departments, where a single teacher struggles with some fifty prisoned infants and endeavours to instil into them some knowledge which the inspector can duly assess. Still more, I wish he could visit a Sunday school and see these infants stacked up in rows, like so many wine-jars, as Aristophanes would say, listening to the doctrinal exhortations of an unimpeachable, but otherwise hopeless and impossible, adult. "What is there behind this gallery?" you ask of the minister who is proudly showing you round his new buildings. "The hot-water boilers for heating," is the reply; and you are no longer surprised to learn that the favourite hymn of the babies is "Here we suffer grief and woe."

And, lest my interlocutor should think that these things are confined to Sunday schools and those lower classes for whom such institutions are needed, may I ask him to read in the sixth volume of Prof. Sadler's special reports, which deals with the schools which prepare boys under thirteen for the public schools? There is plenty of play there, but it is all within the high ring wall which shuts out the actualities of life, and it is all rigidly prescribed and equally rigidly supervised. There is none of the Abraham Lincoln spontaneity and self-activity about it. As for the curriculum, it is such as would be suitable, perhaps, for a generation of juvenile Miltons and John Stuart Mills; it prepares boys of thirteen for scholarships in those foreign languages taught according to the straitest sect of the grammar-grinding Pharisees; sometimes even it prepares boys for scholarship competitions which include both Latin and French and are open to boys of nine years of age. And this—save the mark!—is what our sagacious, practical-minded countrymen call "the best education that money can buy." Yet men can ask, in all seriousness, "Do angels weep?"

The poor, dumb, irrational creatures, for all their dumbness and irrationality, know better than this. Long ago that careful, sympathetic observer, Lucretius, noticed the play of dogs and the way they lived in dreams over their hunting sport. "The great Molossian hounds, with their large, spongy lips, . . . when they essay fondly to lick their whelps with their tongue or when they toss them with their feet and snapping at them make a feint, with lightly closing teeth, of swallowing, though with gentle forbearance and yelp as they caress" ("Lucretius," V. 1,072, Munro).

But it has been reserved for the modern zoologist to show the training value of this play of animals. Let us take, first, the harmless, necessary cat. "In her hunting," says Prof. Ainsworth Davis, "she shows us what a wonderful faculty she has for learning by experience. When she has caught some unlucky wanderer, she avoids killing it at once, patting it with her deadly paw that it may run a little and give her the chance of catching it over and over again. This habit has undoubtedly grown up and become fixed in the race because the cats which practised in this way were made thereby better hunters, and so lived on and trained their children in the way they should. The fact that the cat trains her kittens makes it much easier for a useful habit to become fixed in the race and gives a chance for the inheritance of tradition which might otherwise disappear." Again, passing on to discuss "the pretty, but apparently trivial, play of kittens," he says: "This is not merely due to the superabundant energy of healthy youth, for a kitten will play when almost faint with fatigue. Nor must we think that the kitten plays to amuse us with its pranks. An explanation of that kind might be suggested for the obliging dog, though it would not be right even for him; but the cat is far too independent and self-centred for that. The play of kittens—and of other animals, too—means the acquisition of habits, due at first, perhaps, to imitation of the parent, which are useful as training for the serious business of hunting and fighting which make up most of a cat's life. To live well a cat must have learned to play well, and the same is true for other young animals besides cats."

When I read this I felt inclined to write an appendix to Aesop. Of how much more value are we than many cats! Does it never strike us that so many of our grown-up people live badly because so many of our children never "learn to play well"? How human is that touch about the kitten, faint with fatigue, but still ready to play. Have we never seen the boy who was too tired to go an errand rouse at the sound of a punted football, faint yet pursuing, if you will only give him a football to pursue? "Mutato nomine de nobis fabula narratur."

I am tempted to dwell on this, but I beg you to allow me to quote once more from an author I have cited before in this place, W. J. Long, the author of those excellent educational handbooks, more readable than most, "School of the Woods," and "The Ways of the Wood Folk." He is observing the play of young bears. "There were two of them, nearly full-grown, with the mother. The most curious thing was to see them stand on their hind legs and cuff each other soundly, striking and warding like trained boxers. Then they would lock arms and wrestle desperately till one was thrown, when the other promptly seized him by the throat." Then Mr. Long points out how the bear needs that quick, well aimed dart of the fore-paw to catch fish and frogs, to smash the stumps of trees where honey is stored; how in fighting his enemy his one chance is to hit hard and clean, or, if it comes to a close encounter, to hug and squeeze him to death. But the point is, "How many earthly mothers in our hypercivilized country would have been as wise as that mother bear? How many would have realized that her two young pugilistic sons in some similar encounter were preparing themselves for facing up to obstacles bravely in after-life and 'downing' them? Would not the usual practice have been rather to have sent them both up to bed and to have pronounced over them the Scriptural admonition, 'Let brotherly love continue'"? How many mothers and maiden aunts really understand the various forms which brotherly love is apt to assume with romping, roystering, healthy-minded, animal-spirited British boys? It is the greatest mistake to try to eradicate the fighting instinct in boys. There is as much fighting to be done now as there ever was in life, only the enemies against which we wrestle are principalities and powers and spiritual wickedness in high places. "An able-bodied young man who cannot fight physically," says Dr. Stanley Hall, "can hardly have a high and true sense of honour, and is generally a milk-sop, a lady-boy, or a sneak. He lacks virility, his masculinity does not ring true, his honesty cannot be sound to the core. Hence, instead of eradicating this instinct, one of the great problems of physical and moral pedagogy is to rightly temper and direct it."

Every atom of our children's combativeness is wanted. See that none of it is wasted. It is the essential ingredient, the dynamic of forceful character; it is the tension on the string which sets the whole machinery in motion; and the problem is not to eradicate it, but to temper it rightly and direct it. "Pro patria est dum ludere videmur."

The whole subject of the play of animals has been treated once and for all by Prof. Karl Groos, and, for my part, I find as much "wisdom for our own selves" in his first book, "The Play of Animals," as I find in his later work, "The Play of Men."

Note, in the first place, that it is only the higher orders of animals which play. Your low-grade caterpillar, your limpet, your sea anemone, or other form of animated digesting machine, does not play, and it is only rarely that a turtle is found lapsing into this reprehensible habit. The proportion holds throughout: it is the most highly developed and most intellectual animals, such as dogs or elephants among mammals, and parrots among birds, which do most playing.

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Again, the more highly developed the animal in the scale of evolution the longer is its period of youth. The low-grade animal grows up in no time; the high-grade animal takes a long time to mature his powers; the higher the attainment required, the longer the time of preparation; and Prof. Groos's conclusion, as a biologist, is: "Youth probably exists for the sake of play. Animals cannot be said to play because they are young and frolicsome, *but rather they have a period of youth in order to play*; for only by so doing can they supplement the insufficient hereditary endowment with individual experience, in view of the coming tasks of life. . . . The animals do not play because they are young, but they have their youth because they must play." Clearly, this question of play conditions the whole development of children, physical and psychical. Though it seems paradoxical to say so, there is really nothing so serious for a child as play. As Mr. Archibald puts it pithily: "The child that plays needs a director; the child who does not play needs a doctor. The child who does nothing but play can be taught and trained through his love of play; but the child who does no playing must be regenerated in nerve and muscle." And he is only repeating what the master of all modern educators said: "I can convert childish activities, occupations, amusements—all that goes by the name of play—into instruments for my purpose."

We have now defined our attitude towards play. It is not the attitude of the taboo. We dare not exclude play from our purview, as the old pietist who said, "Play of whatever sort should be forbidden in all evangelical schools, and its vanity and mischief should be explained to the children." This is what I am inclined to call blasphemy; it is what the Greeks would call "fighting against God"—the God who made us as we are in order that He in His wisdom might make us what He would have us be.

Nor, again, can we adopt the attitude of merely tolerating play as a necessary means of recreation or redintegration, because we cannot always be, as Milton put it, "contemplative or pragmatical." The recreative side of play is highly important, and specially so for those whose work in these days of the division of labour is so mechanical and monotonous that it cannot, like our work, for instance, enlist their heart or give scope for any self-expression, still less for æsthetic joy. Yet, be it noted, the classes which most need recreative play are just the classes for whom least opportunity is provided in our social system. The street is their playground, or the court, and the gin-palace and the music-hall are their early ingrained ideas of environment. Is not the real root of the mischief our idea that play is not a necessity, but a sort of luxury for those who can afford it—a slice of tart at the end of dinner; the rich boy has it because he can afford it, and the poor boy goes without because he can't?

The position at which we have arrived is much more pronounced. Play is an integral part of education, not as Herbert Spencer said, "concerned with the less vital matters," but with the most vital matters of all. In fact, in the early years of childhood up to four or five years of age, the two terms, play and education, are interchangeable. It is in play that the child acquires his first notions of the properties of the objects which surround him in this new-found world, learns the law of gravity, the grateful vicissitude of light and dark, simple notions of heat and cold, the pungent taste of soap, and the pricking property of pins; forms his senses of sight and hearing and touch, develops his powers of voice and movement, acquires the control of his muscles, exercises his will to command the muscles, and generally learns to correlate himself with things, or, as Froebel put it, "to make the inner outer."

In the next stage of development, after five years of age, the ideas of play and of work begin to differentiate themselves; but the educational value of play is not diminished. Take, first, the body: there is the rapid molecular change, with its composition and decomposition, and the consequent need for muscular activity, frequent and even violent, to use up the waste products of this rapid combustion and to help the assimilation of new materials by keeping a constant stream of oxygen at play upon the furnace. We have recently woke up to the necessity of physical training. What I fear is that, in our wooden, mechanical way, we will say to ourselves, "So much physical activity is needed, so much oxygen has to be consumed so as to produce carbonic anhydride. Science tells us this. Go to! Let us ascertain the quantities required and provide in the curriculum the requisite amount of physical exercises." It is not merely a question of so much movement and so much oxygen. These the treadmill could supply. What we want quite as much is something which no formal exercises can supply. We want the sense of joyous activity; we want self-direction and self-initiative, and we do not get these when the child is under orders all the time. In these days of applied physiology we must beware of mechanizing the body: something of the infinite nature of man pervades it, too. All we want is to give opportunity for play, both place and time, and enough supervision to check bullying and other forms of vandalism. Given the opportunity, the restless instinct of the children will secure the adequate exercise of their muscles. Their delight in hallooing will make them shout enough to strengthen their lungs. Never be it forgotten that along with free play there goes a heightened vitality which does not come with formal physical exercises, however carefully chosen. If God gives the instinct, let man give the playground. The time is not far distant when we shall recognize that the provision of playgrounds is at least as necessary as the provision of hospitals, because prevention is at least as good as cure.

I have spoken of the hygiene of the body: it would be easy to take each one of Groos's categories—experimental play, constructive play, nursing arts, acquisitive play, curiosity play, imitative play—and to show how each of these contributes to the hygiene of the mind and of the spirit, contributing some element to the wholeness of the man towards which all education should consciously be directed. This would open up the whole subject of hobbies, which is sufficient for a course of lectures in itself. The very names of the categories suggest interesting educational vistas. Here, again, the wise policy is neither to prescribe nor to proscribe, but to encourage. "I took a good deal of pains with his eddication, sir," said Mr. Weller senior; "I let him run in the streets when he were very young and shift for hisself. It's the only way to make a boy sharp, sir."

Best of all, I should like to treat of the social education of play—an aspect which is coming into increasing importance in our generation of carefully restricted families. "Die soziale Bedeutung des Spiels ist ausserordentlich gross," says Groos. "A child should go," says Judge Parry, "to some good kindergarten presided over by some delightfully bright and pleasant lady, merely to learn the lesson that there are other children in the world beside itself. How important it is in life to learn to sit next to some one you cordially detest without slapping him or her. And yet such a lesson, to be really mastered, should be learnt before five or seven at the latest. After that, it can only be learnt by much prayer and—dining out. At dinner parties, and particularly public dinners, one can get the necessary practice in this kind of self-control; but it is better to learn it when you are young, when alone it is possible to master the great lessons of life thoroughly and with comparatively little pain. Men have reached the position of King's Counsel without attaining this simple moral grace."

This fundamental lesson of social science is learned quite early, but the real comradeship of play comes later, as the following table of Prof. St. John shows:—

GAMES OF BOYS.

Age	Individual Play.	Competitive Games.	Co-operative Group-Games.
1–7	Blocks. Sand. Running. Cutting. Shooting. Machinery.		
7–12		Tag. Hide-and-Seek. Marbles. Ball.	
12–14			Base-ball. Basket-ball. Football. Hockey. Tennis.

It is thus after the age of twelve, as the years of adolescence are coming on, that the social instincts become strong and the boy begins to learn that most invaluable lesson that he must accommodate his own activity to that of others: he cannot win the game alone, however brilliant his play may be, but he may lose the

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game for his side by his slackness or cowardice or by his failure to co-operate. So he gets some elementary conception of the salient truth that the great results in this world are only attained when men work loyally and heartily together for the attainment of a common end. He learns also that self-restraint which is one of the three virtues which lead up to sovereign power. He learns pluck and he learns how to concentrate his effort; he learns, above all, justice to an opponent, and that the essential condition for corporate action is the strict adherence to law. He must not only play up; he must play the game.

Stolen goals aren't worth a straw;
Honesty's the better law,
Please remember, never jaw,
Play the game!

Lastly, the game gives a chance to the teacher which he cannot get otherwise. If it is true that in play the real self is disengaged, the teacher who does not know his pupils in their play has only a partial knowledge of them. He does not see their real self. This is specially the chance of the young teacher or of the teacher who, like E. E. Bowen, of Harrow, takes a leaf out of Peter Pan's book and refuses to grow old. "Sympathy," says Herbert Spencer, "is best cultivated by habitual participation in the pleasures of others." The master who has learned his lesson of sympathy on the playing field has no difficulty in getting into touch with the central sensorium of his boys. He can lay his soul alongside.

It is thus in the highest reaches that we understand the higher unity, the fusion of these different branches of training which we mistakenly keep apart; for, as Plato says, speaking in terms of Greek education: "Neither are the two parts of music and gymnastic designed, as is often supposed, the one for the training of the soul and the other for the training of the body. The teachers of both have in view chiefly the training of the soul."

The Chairman, in inviting discussion, said that he agreed with the lecturer that games should not be prescribed. He would go further, and urge that boys should not be forced against their will to play any of the recognized games, and that they should be left entirely free to choose or devise their own methods of relaxation. In view of the lecturer's opinion as to the value of fighting, it was interesting to note that the combative spirit as expressed in fisticuffs appeared to be dying out. It was hardly correct to suggest that Milton's life was unenlivened by play. All through the "Tractate" there was an evident love of open air and the country, and the author of "L'Allegro" could not have been insensible to the influence of play.

Mr. Wilson did not think there was anything very valuable in the Tractate on Education, except the definition of education itself, which seemed to be based upon Milton's knowledge of Greek culture. The Hellenic idea of popular culture was that which enabled a man to perform skilfully, justly, and magnanimously all offices, private and public, in peace or war. From such a definition physical education could not be excluded. How could a man perform the offices of peace or war without courage, physical strength, and all that must be cultivated by exercise and games, and not by poring over books? Music and gymnastics were inseparably connected in the Greek idea of education. The Greeks of those early times could not conceive of a healthy mind in a sickly body or a serene soul in an ungainly covering. So that in this old Greek system of education there was the same idea which the lecturer had been putting before them, that physical education should form an integral part of general education. Modern science had confirmed the wisdom of the Greek system, showing as it did the interdependence of the physical and spiritual or intellectual to be so intimate that one could not be dealt with alone. If physical exercise were regarded as an integral part of education, there must be a certain amount of drill and management as in intellectual education.

Miss Franks thought that joy formed part of development and growth in education, and there could be no progress without it. There could be no joy without spontaneity. But there were various stages, and the amount of spontaneity varied accordingly. In the earlier stages, children were generally unwilling to take the initiative and welcomed direction. Imitation followed, and, finally, they were led to assume the initiative.

Dr. Hayward doubted whether it was safe to draw a distinction between work and play. He looked forward to the time when schools would be open-air schools, or largely so, and the curriculum so alluring in itself that play could be arranged within it—constructive games dealing with the material of the curriculum, and what might be called heuristic games. A more important distinction was that between interest on the one side and drudgery on the other. Mr. Paton himself was one of the foremost advocates of drudgery, believing that a dull subject might be especially valuable because of its dullness. In his (Dr. Hayward's) opinion the only drudgery which was of any use was that which led to something valuable in itself. When education came to be regarded as a means of satisfying the interests, desires, or passions, the distinction between work and play would largely disappear. It was fallacious to suppose that the training of a boy's pugilistic instincts would develop his spiritual efficiency, or to assert, as Professor Armstrong had done, that ability to weigh quantities must be followed by the power to weigh opinions. It was only by means of direct instruction that boys could be made to understand the relation between physical bravery and moral courage.

Mr. Addis said play and work were not different entities, but merely different methods of approach to activities, and these might be utilitarian or non-utilitarian. The method by which a utilitarian end was approached was work, and the method of appoaching non-utilitarian ends might be called play. A man who was playful as an adult had surely been playful in his youth, and Milton must be judged from this standpoint. He entirely concurred in the lecturer's view that playgrounds were necessary as a prophylactic against the hospital, and also that the modern prevalence of small families made it necessary for teachers to supplement the limited opportunities afforded by the home for corporate enjoyment. Teachers were agreed that, generally speaking, children should be left to play by themselves, but there were occasions when the supervision of adults was necessary. The question of the provision of playgrounds for the less fortunate children was one for the philanthropist rather than for the schoolmaster.

Miss Penstone thought that it was important that games should produce a tonic effect. Kindergarten teachers were offenders in this respect. They often laboriously endeavoured to teach children games which were apparently suffered rather than enjoyed. A mass of material should be provided with which children could amuse themselves quietly. The child liked to have a chosen task and to use its material and go on tranquilly with those things which attracted it, and thereby a habit of concentration was formed which might flow over into some other activity of life.

Mr. Beckett thought that the teacher should show sympathy with the children in their games, and encourage them to join in those which required the exercise of physical bravery. Games should form part of the curriculum. In all games there must be a sense of joyous activity, and this could be best secured by letting the children choose their games.

Mr. Thorne, giving his experience of a club for working girls, said that he knew of nothing so effective as morris dancing for securing joyous activity. The dance was practised in conjunction with old English folk songs. Those responsible for the club thought that the reason for the popularity of the morris dance was that it was an expression of English life and character.

Mr. Paton having replied to the remarks of the several speakers,

Mr. Rushbrooke proposed, in cordial terms, a vote of thanks to the Lecturer, which was carried by acclamation.

MEMORIES OF A GIRLS' HIGH SCHOOL.

'TIS THIRTY YEARS SINCE.

By Constance M. Spender.

High-school girls are now the rule rather than the exception. Indeed, they must comprise more than two-thirds of all the girls who go to secondary day schools in England. All of us number high-school girls amongst our acquaintance, and there are many provincial towns where high schools have entirely swamped the private and inefficient day schools, or "select academies for young ladies," which formerly reigned supreme. Those private schools which have survived have been levelled up so much by competition with the public schools that they are often quite as good and efficient.

Many women who read this paper will agree with me in holding that their high-school days were almost the happiest times in their lives, and that no days which have come to them in after life have been more full and varied with earnest work and eager play. Any girl who has been at the head of a high school, or one of the prefects, will also acknowledge that she has never been a more important and powerful member of society since the days she helped to rule her little school world to the best of her ability. She was taught to feel that upon her efforts and influence depended the tone and the well-being of the rest of the school, and she caught a public feeling which should never desert her. A girl who has had such a training ought never to be a helpless and inefficient member of society, and this fact is very widely recognized. The secretary of a large and powerful committee of women was heard to remark a short time ago that the most efficient and businesslike members of the committee were invariably the women who had received a public-school training.

The high school of the present day has not been evolved all at once: it is the product of more than thirty years of careful work. There has been time to test different theories for the education

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of girls, to correct mistakes, and to learn through failures. For this reason, it may be interesting to the high-school girl of the present day to hear what a high school was like thirty-two years ago, from one who was a child of twelve years old on the day it opened. The school still flourishes exceedingly in its original building, though now it has been enlarged in all directions, in order to afford room for the growing numbers and the many organizations of a healthy school. I can hardly recognize my old form rooms now as I wander over the old house, for improvements have taken place on quite a colossal scale. Walls have been knocked down, ceilings raised, and cloak-rooms built. Several classrooms have also been thrown into one to form a central large assembly hall with noble proportions; and last, but not least, a very large playing field has been annexed.

In 1875 the fifty-two girls who met for the first time to work together were accommodated in a spacious private house; but the hall was narrow and many of the classrooms were small, dark, and inconvenient. Such premises would hardly have been chosen in the present day; yet they seemed quite palatial to many a girl accustomed to the cramped quarters of a small private day school. I well remember my awe and admiration of everything. Our Head Mistress was young and pretty and armed with a quiet, dignified authority, in spite of her shyness of manner. I lost my heart to her at once when she shook hands with me and entered my name in a large book, and to the end of my school days I ever remained her faithful slave and warm adherent. We were collected from many different systems of education—from home teaching, from private governesses, and from private schools and boarding schools. One thing we all possessed in common, and that was ignorance.

A paragraph from the Commission of Inquiry into the state of Girls' Secondary Schools in 1870 will best explain this. It spoke of "slovenliness, want of method, want of thoroughness, undue time given to accomplishments, and these taught in a slipshod manner," as universal failings. Of course, there were notable exceptions. Amongst the fifty-two girls who were awaiting examination that day there were two who had been grounded thoroughly by a careful father, and several who had had the advantage of really good governesses. My own case was a very typical one. Though I was only twelve years old, the high school was to be my fourth essay in school life. I had been taken away from one day school and from one boarding school because I was learning nothing at either; but my third school, a private boarding school near London, had filled me with a great desire for knowledge. The Head Mistress was a born educationist, and to the present day I owe her much. She filled us with an enthusiasm for English literature and taught us Latin in a most careful and methodical manner, though we used a very old-fashioned Accidence.

An anecdote about my very first school occurs to me in this connexion. We were a class of eight-year-olds, comprising three boys, myself, and one other girl, and we had a master for Latin. In those days masters were generally decayed professors with a very small smattering of knowledge. They were the rocks upon which private schools were generally wrecked, but they sounded grand; and parents had a way of valuing a school according to the number of masters employed. After learning Latin for a year with our master, not one of us could say the first declension. I quote this as a feat in education which must be almost unsurpassed, for in that class there was a boy who afterwards became a Balliol scholar.

The great event of my first high-school day was the entrance examination paper. We were divided into three sections according to age, and papers were given us of varying grades—(1) for girls over fourteen, (2) for those under fourteen, and (3) for those under ten years old. Only a short time ago I was allowed to see some of the answers to the easy questions set to us upon that autumn day of 1875, and I was utterly appalled at the general vagueness and want of accuracy. In answer to a question about Julius Caesar, one girl wrote: "I never heard of him, but I can tell you all about the Duke of Wellington." About twelve girls wrote nothing at all that day, but sat gazing hopelessly at their papers. A girl of seventeen thought that the Wars of the Roses took place in the reign of Queen Elizabeth, and that George IV. planned the Reformation. On the whole, we did better in history than in most other subjects in spite of these lapses. We were required to write out the reign of a king. I remember choosing William the Conqueror because there is a solidarity about the date 1066, and it was also possible to describe Domesday Book and the Curfew Bell at some length. It took us quite a term to correct our own mistakes in history, and I remember that we were not allowed to study any special period until we knew our outlines and general scheme.

If the history was shaky, the arithmetic was wild. The examiners who correct the beautifully clear work in arithmetic turned out by even stupid girls in these latter days can form no conception of the general muddle of the best of our papers. Many girls of fifteen and older could not multiply correctly by two figures. At that period arithmetic was a purely experimental science to me. I had worked by rule of thumb up to discount, and could do good automatic work if nobody disturbed my mind by inquiring the reasons for anything that was done. At one of my earliest schools nobody who taught us knew any arithmetic at all. We used to do our best with Colenso by ourselves, and were severely punished if we did not produce the right answers to involved problems. We used to work backwards from these answers by a system of ingenious and intricate guesswork until the desired result was obtained. I think one can forgive the high schools who made almost a fetish of arithmetic for some years. I know of one such school where it was taught in every form on every day of the week until work of the highest order was obtained.

The geography papers proved that nothing was known beyond the names of capitals of European countries. One or two girls who had evidently been brought up on those archaic books, "Far Off" and "Near Home," were positive that Roman Catholics were pagans, worshipping idols. I also gather from a survey of these answers that the river Danube waters Denmark, that London is on the Ouse, and Lapland an island in the Arctic Ocean.

The literature was, on the whole, the best known. Indeed, as far as I remember, we did not do any literature the first term, but spent all our time trying to make our insecure foundations a little safer. Grammar and parsing proved full of pitfalls to the unwary that first day, and many of us had never heard of the analysis of sentences. In French the standard was very uneven. Only one girl out of the whole fifty-two could write the verb *aimer* quite correctly. At the end of the first term it was the proud boast of the French teacher that everybody had performed that feat down to the youngest child that learned French.

Many of us felt very sad and subdued as we handed in our examination papers. We were allowed to spend the rest of the morning in wandering over the house, finding our way about it, and in making friends with the little band of teachers who had been gathered together for our edification.

One of the great difficulties of the early high schools was the dearth of efficient teachers. The supply from Cheltenham College and the North London Collegiate School was necessarily limited. There were no training colleges, and it would have been impossible to insist upon a University degree. When I read the advertisements for high-school teachers now, insisting on the highest qualifications for even the lower forms, I smile when I remember that our Head Mistress, capable as she was, had only passed the London Matriculation in the Honours Division, and that the other teachers were considered very fully qualified if they had passed the Senior Oxford or Senior Cambridge Local Examinations.

All the same, they were a singularly efficient staff, and their enthusiasm was most infectious. It was in our hands to build up and form a school that might become great. We were all fellow-workers together in what might eventually prove a great work. That was the key-note of the address after prayers, upon the second morning, when our Head gathered us all together for the first time. "Let us see to it," she continued, "that we build carefully, making every foundation sure; let us learn to be accurate and sincere. If one member shirks her duty, all the rest will suffer." As I recall the scene, I can see the golden September sunshine once more lighting up her earnest face and bright hair, and I remember that I felt thrilled and as if I had caught a glimpse of a new life. Several of my old schoolfellows have agreed with me that upon that day they seemed to grasp a new ideal and to be conscious of a desire to do their utmost; but a great many girls did not even dimly comprehend the meaning of her words.

Some of us listened with beating hearts to the class-lists, which were then read out. Classes were not called "forms" until I had been at school about two years. Upon that occasion there was no first class, just as it sometimes happens that for a time there is no sixth form at a school. In the second class there were about a dozen older girls. Most of them were there, not for

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proficiency, but for age. Such a top form would be the despair of any well taught school now, though there were at least two clever girls in it. I found that I was placed in the third class with fifteen others, and I was very lucky to be there, for it was upon this class that every effort was concentrated. We were mostly young enough to be trained into a good sixth form within three or four years. The Head Mistress gave much of her time to the third class, and we had a Class Mistress who was a great disciplinarian, though not a very great teacher. The two years I spent in that class are full of pleasant memories and also of great surprises. We worked extremely hard, and there was no time limit for our preparation. Nor were there any games, and hardly anything in the shape of gymnastics. Twice a week we had arm exercises, but that was all. Even that was often crowded out for some extra lesson, and no high-school girl of the present day would be allowed to lead the sedentary life that many of us drifted into. I remember so well our delight in our new desks and new books and our wonder at the time-tables, which seemed so marvellously to map out our time in school. Above all, it was such a joy not to be incessantly scolded and nagged at whatever one did. There were rules which could not be broken with impunity, and there was a minimum of marks which had to be gained for each lesson. If that minimum was not gained the lesson was returned, and had to be done over again in the afternoon. Some of us found it very slow work to learn to be thorough and not to scamp. Personally I had so often trusted to quickness of wit to get me through somehow that I was bound to have lapses. One day is for ever graven on my mind. The lesson was a fairly easy French Grammar one. To our horror it was announced suddenly that the Head Mistress would take it that morning, and many were the hasty and despairing glances at our books before she entered. We had all got into the way of trading on the easiness of the French teacher and getting through somehow; but it took the Head only five minutes to discover that only one girl in the class had looked at the lesson. I shall never forget her scorn of the whole class for shirking. She said very little, but what she did say was a revelation and filled us with shame.

I used to have the joy of doing Latin twice a week with the Head Mistress by myself. We used to end the lesson with talking, and I still remember the substance of many of those delightful talks.

It was inevitable that the task of building our school should be a slow one, and there were some unusual difficulties. Many of the elder girls resented the new methods and were too old to learn accuracy. Then the parents often put great obstacles in the way. The parents of the present day are much less carping and critical and much more appreciative. There were absolutely piles of letters of excuses for lessons omitted brought every morning, and there were outside enemies to the school. Indeed, it had to run a fire of adverse criticism from all quarters. The girls who attended the earlier high schools were often made to feel rather a marked class. The system was on its trial, and they were a very small minority. They were sometimes reminded of this fact in very unpleasant ways. They were suspected of being independent, mannerless, and rough, and certainly this was a danger. After the excessive supervision of a private school, where nobody was left in peace for long, it was a comfort to scamper home from school without gloves. In those first days, indeed, the life outside the school was not sufficiently considered or controlled. One was allowed to walk home with any one one liked, and several of us who adored a masculine young teacher imitated her stride and longed for short hair and thick, hob-nailed boots. At the same time there was much less giggling and affectation than there had been at any of the private schools I had been to, and extremely little scolding, though the discipline was somewhat stern.

A girl who wrote a note to a boy in the school at the corner of the road was asked to be removed by her parents; and several cases of cheating during our first examinations were visited with public disgrace. Looking back upon those first school-days, I often think that it was all rather hard upon the elder ones and upon those who had nearly finished with school. To them the new methods were strange and distasteful, and they lived in a whirl of new ideas. They must often also have been aware that the interest was centred upon the younger ones, who would be the future props of the school. Those younger ones ran a certain chance of becoming prigs. They had no games to divert their enthusiasm, no Dorcas Committees, no musical meetings, or prize-givings. All their interest had to be focused on their work, and all work and no play turns Jill into a very dull girl. Again, there was too much adoration of the teachers to be entirely healthy. I remember quite well spending much time out of school hanging about the road on the mere chance of meeting my form mistress, or some one who would give me a smile or a look. The healthy rivalry of games has now absorbed a great deal of this sentiment and converted it into a good public feeling.

The modern high-school girl is unconscious of a system. She has probably never questioned the fact that she has a right to the best of teaching. She has had it always, and all her friends have had it, too; for there is not a private-school room or small secondary school in the land which has not been levelled up by the new standards the high schools set thirty years ago.

In fact, high schools are so much an accomplished fact among us, and play such a large part in English educational life, that we are apt to forget the names of some of the pioneers who founded them. All honour to Maria Grey, Emily Shirreff, Frances Buss, and Dorothea Beale! May we never forget how they laboured in the cause of women's education!

REGISTRATION OF TEACHERS.

QUESTIONS IN THE HOUSE OF COMMONS.

Teachers' Registration Council.

In the House of Commons, on March 22, Sir Philip Magnus asked the President of the Board of Education whether, having regard to the statement in the recently issued Report of the Board of Education that the Board cannot advise His Majesty in Council to issue an order constituting a new Teachers' Registration Council until they are satisfied that it will be representative of the teaching profession and not of certain sections of it only, he will state whether, in order that the Council may be representative of the teaching profession, as intended by the terms of the Administrative Provisions Act, it must necessarily include teachers of gymnastics, of shorthand, and of book-keeping, referred to in White paper (Cd. 4402), to whose associations the scheme for a new Teachers' Registration Council, submitted to the Board, was forwarded by the Board for consideration; and whether, in the event of any such sections of the teaching profession being unable to agree as to the constitution of a Teachers' Registration Council, he intends to postpone indefinitely any recommendation for the formation of a Council.

Mr. Runciman: I do not think it is possible to discuss by means of questions and answers what bodies should or should not receive representation on a new Registration Council, and I can only refer the hon. member to the answer which I gave on the 9th instant, to which as yet I have nothing to add.

Sir Philip Magnus: Is the right. hon. gentleman able to answer the question which I put down as to whether this Registration Council will necessarily include teachers of all these special subjects referred to in the White paper issued by the Board of Education?

Mr. Runciman: I have answered that question several times. I can only add that, as I have said on previous occasions, a Registration Council cannot be considered representative if it excludes large sections of the teaching profession.

Sir Philip Magnus: May I ask whether the Board of Education are opposed now, as they certainly were in 1906, to the reconstitution of any Registration Council?

Mr. Runciman: If the hon. gentleman will put a question down on the paper, I will give an answer.

Training for Secondary Teachers.

Sir Philip Magnus asked the President of the Board of Education whether, seeing the movement in favour of providing systematic training for the teachers of secondary schools is stated in the Report of the Board of Education to have received, so far as women were concerned, some stimulus from the regulations of the Teachers' Registration Council, and seeing that the Head Mistresses' Association, the Assistant Head Mistresses' Association, the College of Preceptors, the Teachers' Guild, and the National Union of Teachers, each of which bodies includes a large number of women teachers, have petitioned the Board in favour of the reconstitution of the Council, now in abeyance, he will take steps to accelerate the formation of the Council so that it may continue to give the much needed stimulus and encouragement to the training of teachers for secondary schools.

Mr. Runciman: The point referred to was made with reference to the former Register, the principal feature of which was the

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registration of secondary teachers on a separate list (known as Column B) from elementary teachers. That form of Register was, it is believed, scarcely in conformity with the Act. I doubt whether the same stimulus would be supplied by any Register in which the names of all registered teachers must be "in alphabetical order in one column." This point was fully dealt with on page 21 of the White paper (Cd. 4185) issued in July, 1908. I am informed that some people, whose opinion is entitled to respect, think that a more effective stimulus for the training of secondary teachers, men as well as women, will be derived from Section 15 of the Board's Regulations for secondary schools.

REVIEWS.

The Yeast of National Feeling.

"The Cambridge Modern History." Vol. XI., *The Growth of Nationalities.* (16s. net. Cambridge University Press.)

The present volume, with more than a thousand pages (over a hundred and fifty of them devoted to bibliography), covers, roughly speaking, a quarter of a century. The time "is remarkable as being an epoch of violent international and civic disturbance interposed between two generations of almost unbroken peace—the period 1815–45 and that from 1871 to the present day," and "it is also, from the point of view of universal history, the most important period since the Congress of Vienna." The explanation is embodied in the title of the volume: the artificial arrangements of "sovereigns and statesmen" are burst and broken by the growing forces of national feeling and natural requirements. The opening chapter takes up the tale of Great Britain, and, did we not recognize the necessities of space, we should have wished it much more detailed and much sharper in outline. It deals with the deplorable state of the country, the potato famine and coercion in Ireland, and the repeal of the Corn Laws and of the Navigation Laws—a story with the most important bearings upon prominent questions of the present time. But the condensation crushes all the sap out of it. Later we have the story of the Crimean War, in which a policy of drift and division of the Cabinet entangled the country, and of Parliamentary reform, replacing (in form, at least) the government of the middle classes by the government of the people. More essentially important than these two chapters are the matters crammed summarily into a single paragraph of three-quarters of a page enumerating the material results of home and foreign trade, the practical applications of great inventions, and the prudent management of the national finances—records of vigour and growth "far better worth recording than the Parliamentary conflicts of rival statesmen" or the dodges of the diplomatic chess-board. The final British chapters are concerned with India and the colonies. Lord Durham's Canadian policy is admirably explained in origin, principle, and operation: "Perhaps Durham himself, had he been praised for the originality of his ideas, might have replied that not he, but Bentham and Fox—names not usually associated with Imperial unity—were the real inspirers of his famous Report and the true legislators for generations yet unborn." But the main point is the efficiency of the principles. The progress of events in South Africa and in Australasia is also instructively outlined. In the Indian section the military operations, which are all too numerous, are not effectively described, partially by reason of the limits of space. It is a very suggestive and condemnatory remark that "India was startled by the news" of the outbreak of the mutiny: it places the heaven-born Service in a rather awkward predicament. The causes of the rising are by no means efficiently examined, and when the writer says "it was reported that the cartridges, smeared with the fat of sacred cows and the lard of polluted pigs, were to be bitten by Hindu and Mohammedan alike," we cannot but say that history requires him to state explicitly the ascertained facts of the case. Again, admitting ample cause, one naturally asks why the mutineers got head at the first points of outbreak, and why the movement was not instantly stamped out; but the writer ignores the obvious question, and betrays history by a false patriotism or a false consideration for weaklings in authority. "The transfer of Government to the Crown—with its necessary consequence of Parliamentary control—was," no doubt, "an epoch in Indian history"; but the expression should not disguise the fact that the Government had been practically in the hands of the Crown for more than a generation before.

The interests of Great Britain again come up in connexion with events in the Far East, on which there are two important chapters treating of China and Japan. Here, too, occur unfortunate reticences—inevitable, apparently, when officials or ex-officials essay to write history. Thus the writer tells us how the American House of Representatives observed that the Opium War of 1840–42 "had originated in the refusal of the Chinese Government to receive Ministers appointed by the British sovereign and in the rejection and expulsion with insult and indignity of Lord Napier," &c., adding that "this American vindication of British policy is remarkable." But he neither corrects the statements nor dissents from them, nor even expressly agrees with them. The reader would, indeed, learn from a previous page how a Minister had been sent out on a "grievous misunderstanding" of the mind of the Chinese Government; but he must go elsewhere to discover that Lord Napier himself was amazed that his impudence was treated by the Chinese with an amount of forbearance absolutely ridiculous to the Western mind. "Four edicts," he wrote to the Home Government (August, 1834), "have been let off against me for landing without a red chop, or permit. I have been ordered off and entreated to depart; yet with all this they have not yet taken me and sent me down the river. Suppose a Chinaman, or any other man, were to land under similar circumstances at Whitehall, your Lordship would not allow him to loiter as they have permitted me." Such insolence is all but incredible, even with the man's own confession before one. In like manner the writer expresses no opinion on the seizure of the crew of "the British *lorcha* 'Arrow'" in 1856, and leaves the reader under the impression that it was a high-handed act of Chinese aggression. Why does he not explicitly admit that there was nothing British about the *lorcha* except her captain (who was not on board) and her flag (which Sir John Bowring testified "she had no right to hoist"), and that the Chinese were perfectly right in their action? Such reserves do violence to history and put regrettable blots on the pages of this great work. Otherwise the chapters are very convenient and instructive narratives.

The progress of affairs in France is traced in ample lines and with conspicuous ability, mainly by Prof. Emile Bourgeois, of the University of Paris, the period of Napoleon III.'s personal Government of the Empire being adequately handled by M. Albert Thomas and the Franco-German War by Major F. Maurice. Dr. Ward, Master of Peterhouse, deals most capably and luminously with the Revolution and the Reaction in Germany and Austria, while special aspects are ably presented by three German or Austrian professors. A very interesting sketch of the achievement of Swiss Federal Unity is furnished by Prof. Œchsli, of the University of Zurich. The story of Italian Unity is told by the late Prof. E. Masi. Ample attention is also bestowed by competent authorities upon the political movements in other countries of Europe—in Spain and Portugal, in Scandinavia, in Holland and Belgium, in Russia and in minor Slavonic communities. There is also a very able and well informed chapter on Rome and the Vatican Council. Several attractive chapters review the progress of literature in various countries. The present volume is equal to any of its predecessors in ability and interest.

What is Man?

Man's Origin, Destiny, and Duty. By Hugh MacColl, B.A. (4s. 6d. net. Williams & Norgate.)

Threefold, judging from the title, this book is in reality fourfold, not to say manifold. For it deals with the nature of man and also of the Infinite, not to mention the intervening "superhuman." But, like all Mr. MacColl's other books, it is eminently readable, and stimulates thought of a high kind. Moreover, it is distinctly favourable to religion, unbounded respect being given to the Will of God, "without which no law of Nature is valid—not even the law of gravitation."

The first chapter is devoted to "The Soul and the Body." We should have preferred the use of "human spirit" instead of "soul," especially since the Revised Version of the New Testament translates ψυχή so constantly by "life"; and we also desiderate in it the function of willing as well as of feeling; whereas Mr. MacColl, in his preface, speaks of "the soul (which I simply define as *that which feels*)." Strange to say, he elsewhere states the following as one of the questions with which he deals: "*Where is the Ego, or Soul, that wills?*" The *ego* is undoubtedly a sentient power, capable of reacting on the outer world, which supplies it with objects for feeling and motives for willing.

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Otherwise, man would be the passive victim of every impression produced upon him, and have no responsibility. Mr. MacColl proves very clearly that feelings which seem to be at some remote part of the body are in reality at the very seat of thought; and he thus concludes: "Since, then, the Soul feels, and the body (the brain not excepted) does not, there is no escape from the conclusion that in all sentient animals the Soul and body are two separate entities." But when he goes on to say that, as an entity, "the Soul, in its higher developments, thinks and reasons," he is attributing to the "Soul" what we feel unable to attribute to the "human spirit"; and we are convinced that he greatly underrates the capability of the brain as an idea-framing organ. Everything connected with the elaboration of ideas, and the storing of them in memory, is carried out by the brain. Hence the decay of memory, and reasoning power generally, as age advances. The will to think, and some exercise of choice, as the result of thought, in the mode of our reaction on the world around, is that which, in addition to feeling, we can alone attribute to the sentient power. Thought goes on in spite of our will, for to "think of nothing" is oftentimes one of the most difficult achievements.

The chapter on "The Superhuman" is very forcible, but must be read in its entirety to be properly understood. St. Paul's warning, "But who art thou, O man?" not infrequently comes to our mind, to be shortly allayed by the cogency of the argument as it proceeds. And it is a curious circumstance that the present writer, by aid of the same publishers, gave vent, forty years ago, to much the same proposition as the first following:—

Moral evil, the evil called wickedness, is a necessary, indispensable factor in the upward development of the sentient universe—*e.g.*, the knowledge of evil as well as of good (so as to be able, with a full understanding, to choose the one and reject the other) being essential to true happiness—that is, to Godlike happiness—He instituted at the outset the law of virtuous self-denial—a law to which our nature was not equal, at least when allured by deceit, that He might give us every blessing in Christ. (See "The Spirit Controversy," 1869, page 69.)

The chapter on "The Infinite" deals with the subject as a devout mathematician might be expected to deal with it. But, in treating of Time and Space in this connexion, there is no reference to Kant's "Critique of Pure Reason," and the masterly account of the matter therein given—namely, that time and space are forms of thought, neither of them subsisting of itself, even in relative magnitude. Nevertheless, as Kant asserts, they are "two sources of knowledge, from which, *a priori*, various synthetical cognitions can be drawn," as in pure mathematics. There is much in the chapter on "The Foundation of Ethics" that we should like to quote: "An atheistic system founded on avowedly human authority alone will never command the respect of the average man." There is "one Supreme Ruler over all. His and His alone must be the final authority; to Him and Him alone must be the final appeal. What *He* approves must, by express definition, be *right*. What *He* disapproves must, by express definition, be *wrong*."

Mr. MacColl does not disbelieve miracles. Nor does he draw the distinction, so often drawn, between the miracles of Christ and scientific wonders of the present day—namely, that the latter can be repeated and verified, whereas we have to take the former on trust. There was no want of power on Christ's part to repeat his miracles: "He healed them all" are words used more than once; the fact being that he knew how, whereas we do not. Yet our author says: "Deplore it as we may, it is an almost universally admitted fact that among all classes belief in the Biblical miracles, those of the New Testament not excepted, is fast declining." And he tries to show how they can be done without, which is very remarkable, considering the lofty terms in which he elsewhere speaks of Christ and Christianity.

The chapter on "Evolution and Design," and an appendix containing a reprint from the *Hibbert Journal* of the author's paper on "Chance or Purpose," are fine specimens of cogent argument; especially where he details an instance, capable of verification by schoolboys, of the combination of chance and design, showing that "chance, working within the limits of prescribed conditions, can be made to evolve with almost perfect accuracy in every detail, foreseen, designed, and predetermined figures of various forms, sizes, and shadings."

There are, besides, chapters on "Man and the Lower Animals," on "Pseudo-Evolution," and on "The Fallacies of Haeckel," which are all of exceeding interest, but need to be read in full to produce their true effect. Indeed, we could wish this book of wise and earnest thought were placed on the shelves of every public library in the land. It may be fanciful in parts, as where it supposes the *ego* to be at a distance from the body which it is generally held to inhabit. But, as a whole, it is worthy of warm commendation, and will harm no one. There is a breadth and breeziness about it which will act as a tonic to the reader, and at least make him think more kindly of those who differ from him.

We could have wished, however, that a chapter had been devoted to the formation of habit, which is one of the chief ethical functions of the sentient power, and which seems to occur largely in the cells of the brain, to which afferent nerves bring sensations and from which efferent nerves proceed to the particular muscles concerned in the reaction. The track between the two sets of nerves seems doubtful for a while, but is strengthened by repetition and becomes well defined in time, like a path across a field. In this way actions which at first are voluntary, and the result of conscious effort, become well-nigh automatic, and such may be good or ill. D. B.

GENERAL NOTICES.

CLASSICS.

M. Tullii Ciceronis De Finibus Bonorum et Malorum Libri Quinque. Edited by W. M. L. Hutchinson, sometime Fellow of Newnham College, Cambridge. (8s. 6d. net. Edward Arnold.)

A complete edition designed to "enable what is, on the whole, Cicero's best philosophical work to be read and appreciated not only by students at the University, but by sixth-form boys." The interest is both historical and practical, and the difficulty, as usual, is mainly in the first steps. The text of Madvig's latest edition is followed, with the exception of a few readings, mostly Müller's, which are set forth in a brief appendix. A very careful and instructive introduction outlines the philosophical position and stimulates the reader to further inquiry. Arguments are prefixed to the several books, showing concisely and clearly the nature and disposition of the contents and substantially elucidating the exposition. The notes, if not numerous or extensive, are directed to judiciously selected points, and will be found to be helpful where help is really desirable: a few, requiring space beyond the limits of a foot-note, are usefully appended to the text. The volume is spaciously printed and agreeably got up. It is a most competent and welcome edition of an extremely interesting work.

Basis Latina. An Introduction to Latin through the Language to the Literature. By Edward Vernon Arnold, assisted by Walter Rippmann. Part I., Introduction, Syllabus, Grammar, Notes, Vocabulary, Index. (1s. 6d. Dent.)

What knowledge of the Latin language is to be expected of boys and girls who leave school or give up the study of the subject soon after they have reached the age of sixteen? What knowledge can they acquire in the time available which will be of permanent value to them? The present volume, while an attempt to promote a solution of some important questions connected with the study of Latin in secondary schools, is most directly addressed to answering these two questions, and particularly the latter of them. The vocabulary is selected so as to present the words that are "most important to a beginner," though we are not so sure about the propriety of giving "rather more attention to those words which are more common in conversation than in classical literature"—a point of inconsiderable detail, however. The accidence is sensibly limited by the vocabulary and otherwise, and here there is room for wider disagreement on details. Syntax, of course, is involved in manifold difficulties, which, we think, are here met on sound lines of approach, and a beginning is attempted in comparisons of ancient and modern idioms—a process dependent on the acquisition of the pupils. The grammar and other notes contain much that is suggestive, as well as points that are directly useful. The work appears to be a sequel to "Forum Latinum" (same author and publisher), and "is intended as a companion book, taking the place of a grammar, for the second, third, and fourth years of the school Latin course." It is specially important that teachers of Latin should not only examine the book in point of theory, but also submit the course to the test of practice.

The trustees of the British Museum have published *A Guide to the Exhibition illustrating Greek and Roman Life* (1s. 6d.). "In this Exhibition an attempt has been made to bring together a number of miscellaneous antiquities which hitherto have been scattered through the Department" of Greek and Roman Antiquities, "in such a method as illustrates the purpose for which they were intended rather than their artistic quality or their place in the evolution of craft or design." The purposes of the various articles and figures fall into more than twenty distinct groups, presenting together a most instructive, if not at all points complete, view of the public and private life of the Greeks and the Romans. The members of the departmental staff have co-operated in the work. The descriptions and explanations are scholarly and lucid, though necessarily concise; and useful references are appended to the several sections. There are 242 illustrations, judiciously chosen and admirably reproduced. The volume is a most instructive companion to the Exhibition.

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MATHEMATICS.

Graphics, applied to Arithmetic, Mensuration, and Statics. By G. C. Turner, B.Sc. Lond. (6s. Macmillan.)

The author has made a close study of the subject and is possessed of experience in teaching. Accordingly, it may be anticipated that this text-book will prove an efficient help to a large class of students of pure and applied mathematics. Written without reference to any special examination syllabus, the work has admitted of more elasticity with regard to arrangement and treatment than is in many cases possible. At the same time, by selecting from its contents courses varying in standard of difficulty and sufficiently clearly indicated, the volume may be adapted to the work of secondary schools, to the requirements of candidates preparing for military and naval examinations, and to the courses of reading suitable both for students in technical colleges and for those whose object it is to obtain the degrees of the University of London. A very large number of problems are fully worked, for the purpose of illustrating principles and methods of solution, but the reader is supposed to carry out the graphical constructions independently and to verify his own results by comparison with the diagrams that accompany the text. Accuracy to three figures is the standard generally maintained and regarded as essential. The section devoted to the discussion of the equation to a straight line needs revision, for the old error occurs—namely, that of ignoring the *sense* of lines, after accurately defining it and dwelling on its significance. Great care has evidently been bestowed on the preparation of the original drawings required for the numerous diagrams and also on the reproduction of them. Frequent sets of exercises afford abundant material for practice in the working of problems.

Concurrent Practical and Theoretical Geometry. Part I. By W. J. Potter, M.A. Cantab. (1s. 6d. net. Ralph, Holland, & Co.).

In Part I. Mr. Potter discusses the substance of Euclid's First Book—as far as Proposition 34—and also some important additional matter. The mode of treatment is thoroughly modern, and has much to recommend it. The way for each new advance in the study of the theory of geometry is prepared by means of suitable experimental work, interesting in itself; then the proposition under consideration is formally proved; and, finally, the truth established by the demonstration is applied so as to deduce further facts. The course of instruction, of which the original scheme has been modified to meet the demands of experience, has stood the test of years in one of our well known schools. The manner in which the writer deals with the subject of some elementary loci is satisfactory, for he is not, like many authors, content merely to show that all points lying *on* the locus satisfy the given conditions; he also proves that no point *not on* it will satisfy them. The demonstrations of the propositions are good and well arranged, but the tabular form adopted for setting out the work is, nevertheless, open to adverse criticism, since young students are apt to waste time in the excessive ruling of lines, and often the mischief is carried still a stage further by the employment now of black and now of coloured ink.

ENGLISH LITERATURE.

The Arthur of the English Poets. By Howard Maynadier. (6s. net. Constable.)

The work has grown out of a course of lectures at Harvard University and Radcliffe College. It needs no argument to persuade one that the stories about Arthur are worthy of study; and it is rather surprising "that there exists in English no history of the Arthurian legends at once accurate, well-proportioned, and readable." Mr. Maynadier takes possession of the vacant field. He thinks that, on the whole, we may believe in a real Arthur, "probably not of royal blood," but "only a brave leader, perhaps one of considerable military genius, though we may suppose of comparatively slight civilization, a half-barbarous chieftain, attached to the party of the Britons who had viewed with joy the departure of the legions" of the Romans in the fifth century. He seeks to trace the evolution, hypothetical and historical, of the Arthur of popular story. Some three centuries after Arthur's victories, "the so-called history of Nennius shows us that a romantic hero-story of Arthur had got started among the British Celts"; and more than three centuries after that, Geoffrey of Monmouth started Arthur's literary fame on traditions gilded with romance. Mr. Maynadier then discusses the legends as they have been moulded in literature from Geoffrey down to Tennyson. He has "not sought to advance new theories regarding the origin and development of the Arthurian legends, though here and there may be found some new suggestion"; his purpose has rather been to select what seem to him "the sanest of the frequently conflicting opinions on the Round Table stories which students of medieval literature have held, and to present them clearly," so as "to indicate the general tendencies of Arthurian literature in the English world from its first appearance to the present." Mr. Maynadier writes with ample knowledge, with trained critical faculty, and in simple and agreeable style. Every chapter is full of interest and charm. As to Tennyson's "Idylls," he thinks, "it is not too much to say that, for their melody, dignity, beauty, meaning, and human interest, they present the huge conglomerate mass of the Arthurian stories in their noblest form." "It was not easy to make the Arthurian stories over into a poem which, modern in spirit, should keep the old incidents and the picturesqueness of the mediæval romances. But Tennyson has succeeded in writing his score so that the horns of his Arthurian Elfland, always distinct whether faintly or loudly blowing, are in harmony with all the new instruments in the mighty symphony of Victorian England."

English Pastoral Drama, from the Restoration to the date of the Publication of the "Lyrical Ballads" (1660–1798). By Jeannette Marks, M.A. (Wellesley), Associate-Professor of English Literature, Mount Holyoke College. (5s. net. Methuen.)

"As an indicator," the author thinks, and rightly, "this work should be of value. It covers the ground from the reopening of the theatres to the natural death of play-writing and the incoming of novels; it exposes the fundamental weaknesses of dramatic conception during the Restoration and discusses a past of vital beauty for the pastoral, and then, by means of some two hundred plays, it follows, often wearily enough, through triviality, cheapness, and vulgarity, the complete degeneration of the dramatic pastoral mode." The origin of the pastoral is examined, and the development of the pastoral drama is traced; definitions of the pastoral are reviewed, involving a consideration of the nature and scope of the pastoral literature and the themes of pastoral poetry; the stage setting is presented; and a large number of the more important and typical pastoral plays and operas are analysed and their significance estimated. All this may be regarded as an essay based upon the final section of the book, which consists of a very considerable bibliography of Italian and Spanish pastoral plays and English pastoral plays and operas, and of critical works on the pastoral. The compilation, which includes an exact record of the title-pages of the first editions of the English plays and frequent supplementary notes of utility, must have been a prolonged and laborious business. The handling of the materials in the body of the work is very careful, thoughtful, and independent, and, with whatever deductions at points, contributes effectively to the substantial discussion of the subject. For the general reader the interest is varied and curious. The volume is handy and generously furnished forth.

HISTORY AND GEOGRAPHY.

The British Empire: its Past, its Present, and its Future. Edited by A. F. Pollard, M.A., Fellow of All Souls College, Oxford, Professor of English History in the University of London, late Assistant Editor of the "Dictionary of National Biography." (5s. net. The League of Empire, Caxton Hall, Westminster.)

The essential purpose of this book "is to promote a knowledge and, what is more important, an understanding of the Empire as it is, and of the causes which have brought it into being, and to provide that minimum of information without which all discussion of Imperial questions is barren, if not productive of positive mischief." The secondary object "is to make further provision for education in the Empire." It "is the work of no one school of politics, and represents no single standpoint," and "no effort has been made to impose upon it a fictitious uniformity of view." To the volume "writers have contributed of all shades of opinion and from all quarters of the Empire; suggestions have been adopted from authorities in almost every Dominion, Colony, and Dependency of the Crown; and it reflects a diversity of gifts and aspirations which no other political system has known how to combine with imperial unity." Different parts of the Empire have developed upon different lines; and, while it is well that every Dominion and Colony should understand the British point of view, it is also well that Great Britain should understand the points of view of her adult children. The primary object, accordingly, is to explain rather than to recapitulate history. The work is "the result of two and a half years' labour in which more than a hundred authorities have, in varying degrees, co-operated." Now, then, we ought all to be able to understand each other. But shall we? Prof. Pollard has struggled most ably with the all but impossible task of condensing the materials into some eight or nine hundred pages. Facts must be given as the basis of conclusions, and the statement of facts is often too condensed for the reader to do otherwise than to take the conclusion on trust. Yet it is a very valuable work for popular instruction, though inevitably there will be at many points dissent from the opinions expressed, especially with regard to the Colonies and India.

Over-Sea Britain. By E. F. Knight. (6s. net. Murray.)

This volume is "a descriptive record of the geography, the historical, ethnological, and political development, and the economic resources of the Empire" so far as concerns the Nearer Empire—that is to say, the Mediterranean, African, and American possessions of Great Britain, Asia and Oceania being reserved for a second volume. Mr. Knight is well known as a traveller, a war correspondent, and an engaging descriptive writer, and is able to draw upon his own personal experiences and observations in most of the countries under the British flag. The geographical description, with the account of productions and industries, is very satisfactory: the main points are judiciously selected and vividly presented in a very readable narrative. Here and there, on matters of history and economics, the writer provokes controversy, into which we do not enter: the welfare of the Empire and the best relations between the Colonies and the mother country are matters of common interest, but the means of attaining them are keenly disputable and disputed. However, it is only occasionally that Mr. Knight lapses into what we regard as heresy: in many cases his self-restraint is manifest. With such reservations, we can commend the work highly. There are nine excellent maps, and the volume is liberally furnished forth.

(*Continued on page* 178.)

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London: HENRY FROWDE, Oxford University Press, Amen Corner, E.C.

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Historical Portraits: Richard II. to Henry Wriothesley, 1400–1600. The Lives by C. R. L. Fletcher, formerly Fellow of All Souls and Magdalen Colleges. The Portraits chosen by Emery Walker, F.S.A. With an Introduction on "The History of Portraiture in England." (8s. 6d. net. Clarendon Press.)

"It is obviously impossible to begin a series of portraits" of persons celebrated in the history of Great Britain and Ireland "from a date at which portrait painting was unknown north of the Alps." Indeed, it is not until we come to Henry VII. that "we quit the category of Court-cards and enter the realm of portraiture in the modern sense." The introduction sketches, in a very interesting and instructive way, the various developments of the art in England. "From an artistic point of view, nearly all the paintings reproduced in the present volume are what may be called primitive—that is to say, they belong to an epoch and style in which a quasi-deceptive appearance of roundness, depth of tone, and aerial perspective was not regarded, as it has been in more modern times, as a principal object of attainment." There are just over a hundred portraits, gathered from many collections, public and private, and admirably reproduced. The concise historical notes by Mr. Fletcher are characteristically pointed and trenchant. The volume is handsome enough for a show-book, but it ought also to be available on the shelves of the higher school library as a vividly illustrative companion to the history of the two centuries it covers. We are glad to observe that "it is hoped that subsequent volumes may carry the series down to the middle of the nineteenth century."

MUSIC.

The Theory of Music. For Students and Teachers. By J. Lightfoot, D.Sc., M.A., Mus.Bac. (2s. net. Ralph, Holland, & Co.)

The work "comprises the elements of music in both notations and elementary harmony, together with a short exposition of the principles of voice production and voice training." It is intended to provide for students and teachers a systematic exposition of the theory underlying the elements of music. The scientific precision that we have remarked in the author's books on mathematics and logic has been well appreciated in his orderly development of musical theory: the volume now appears in a third edition, with three new chapters. Numerous well devised exercises and examination papers are given. The work covers the syllabus of the University Senior Local Examinations, and it will be very welcome to candidates in its new and enlarged form.

Folk Songs from Somerset. Gathered and Edited, with Pianoforte Accompaniment, by Cecil J. Sharp. Fifth Series. (5s. net. Simpkin.)

It is only a few months since we noticed the preceding two series of this most interesting collection. The present volume contains the words and tunes of 26 songs, including sailors' chanties, Christmas carols, and wassail songs, forms not exemplified in the preceding series. The whole tale of the five series is 130 songs—a remarkably fruitful result of Mr. Sharp's diligent exploration. Nor is the field even yet exhausted. Mr. Sharp has also collected a great many children's singing games and dancing tunes, as well as some dances, which, however, he reserves for a possible supplementary volume. Meantime, all interested in the recovery of bygone illustrations of national music will renew their cordial thanks to him and to the helpers of his quest.

YEARBOOKS.

The Schoolmasters Yearbook and Directory, 1909 (7s. 6d. net, The Year Book Press, c/o Swan Sonnenschein & Co.), is well up to the high mark of former years. The review of the year handles the main points concisely and effectively. The information on matters of administration, organization, examination, and inspection, &c., is selected with practical judgment, and is most convenient for reference. The Directory of Masters in Secondary Schools, and the List of Secondary Schools, with Staffs (which have been brought, as far as possible, into correspondence), are specially valuable; and it is to be hoped that the appeal of the editor to be kept informed of changes will be carefully noted, especially by head masters. There is every evidence of keen interest and of unsparing labour on the part of the editor and of liberality and enterprise on the part of the publishers—virtues that deserve warm recognition. The volume, we repeat, is indispensable to educationists.

Messrs. Swan Sonnenschein & Co. issue *The Public Schools and Preparatory Schools Yearbook for* 1909 (3s. 6d. net). A fresh importance is given to this elaborate and valuable compilation by the arrangement that the next annual issue will appear as the Official Book of Reference of the Head Masters' Conference. In the past five years the volume has steadily grown: while the old subjects are kept thoroughly revised to date, new subjects are constantly pressing forward. Evidently every effort is made to provide full and accurate information, and the result is an extremely useful and trustworthy book.

Messrs. Scott, Greenwood, & Son have just published a *Handbook to the Technical and Art Schools and Colleges of the United Kingdom* (3s. 6d. net). It forms a directory of nearly 1,000 institutions, with a concise statement of the more essential facts regarding them. A considerable index to courses of instruction is appended. The volume will be very useful for ready reference.

Messrs. Eyre & Spottiswoode issue *"The Epicure" Directory of Schools and Teachers of Domestic Economy* (2s. 6d.)—a revival of a former directory of ten years ago, but practically a new departure. It contains a great mass of pertinent facts, many of them of a kind most difficult to collect, especially when the forms sent out for information are not returned—which not unfrequently happens. It will be found serviceable for reference.

MISCELLANEOUS.

The *Transactions* of the Second International Congress on School Hygiene, which was held in London in 1907, have now been published at the Offices of the Royal Sanitary Institute, Margaret Street, W., in three volumes, 12s. 6d.; bound, 15s. net; single volumes, 5s. The matter is extraordinarily various and very largely good; it is in English, French, or German, and the whole has been edited and arranged by the Honorary General Secretaries, James Kerr, M.A., M.D., D.P.H., and E. White Wallis, F.S.S. The volumes constitute a most valuable mine of information upon all aspects of the subject, and it is highly desirable that the substance of the more important parts should get promptly worked into the popular consciousness.

Messrs. Cassell have commenced to issue (1) *The King's Empire pictured by the Camera*, to be completed in twenty-four fortnightly parts (7d. net each); and (2) *The World's Great Pictures*, to be completed in twelve fortnightly parts (7d. net each). The first numbers are handsomely and lavishly illustrated, and the letterpress is instructive. Both serials are sure to be very popular.

The Hardy Patent Pick Company, Limited, of Sheffield, offer to send to any head teacher, on application, pamphlets entitled *Tales told in a Shop* (such as "The History of the Pick"), which they have issued for the use of schools. Also a large and clear "Diagram of Coal Pit and Workings," accompanied by a descriptive sheet. These publications, if slight, are usefully informatory.

FIRST GLANCES.

Classics.

Aeschylus, The Persians of. Translated from a revised text by C. E. S. Headlam, M.A., formerly Fellow of Trinity Hall, Cambridge. 1s. George Bell (Classical Translations Series).

[With aid of notes left by Dr. Walker Headlam, the translator of the previous plays of Aeschylus in the series. Close and accurate].

Greek Exercises, Elementary. By the Rev. A. E. Hillard, D.D., High Master of St. Paul's School, and C. G. Botting, M.A., Assistant Master at St. Paul's School. 2s. 6d. Rivingtons.

["An introduction to North and Hillard's Greek Prose." Simple; carefully selected vocabulary; sufficiently varied constructions; one Greek-English exercise to three English-Greek exercises; well graduated. Vocabularies. Practical and very serviceable.]

Ovid, Easy; with rules for scansion and exercises thereon. By Frank Ritchie, M.A., Matriculation Examiner (1900–07) to the University of Wales, &c. 1s. Longmans.

[Passages easy, short, and self-contained. Excellent selection; notes brief and useful. Vocabulary.]

Plato, The Euthyphro of. With introduction and notes by St. George Stock, M.A. Oxon., Lecturer in Greek at Birmingham University. 2s. 6d. Clarendon Press].

[Comprehensive and pointed introduction; helpful summary of the dialogue; reasonably full and very good notes. Excellent edition.]

Puerorum Liber Aureus. By T. S. Foster, B.A. Oxon., Assistant Master at Epsom College. 1s. 6d. A. & C. Black.

["A first Latin translation book"; exercises for retranslation; full vocabularies, particular and general; 15 illustrations. Revised edition.]

Virgil: Aeneid, Book XI. Edited by L. D. Wainwright, M.A., Assistant Master, St. Paul's School. 1s. 6d. Bell (Illustrated Classics).

[Useful introduction; text in sections headed with brief contents; ample and judicious notes; vocabulary; illustrations.]

Mathematics.

Algebra, Exercises in. By R. Nettell, M.A., Head of the Mathematical Department, Royal Naval College, Osborne, and H. G. W. Hughes-Games, M.A., Mathematical Master in the same College. 5s. 6d.; without answers, 4s. 6d. Longmans.

[Progressive, varied, abundant. Most useful.]

Geometry, Concurrent, Practical and Theoretical. By W. J. Potter, M.A. Cantab.; Second Master, Roan School for Boys, Greenwich. Parts I. and II. 3s. net. Ralph, Holland, & Co.

[See General Notices—Mathematics. A third Part will follow. The whole work will contain the substance of Eucl. I. to XI., treated both experimentally and formally.]

Geometry, Elementary, Cassell's. By W. A. Knight, M.A., B.Sc., formerly Head Master of Devon County School. 2s. 6d.

[Alternative proofs frequent. Figures large and clear. Plenty of exercises.]

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Geometry, Solid, Practical. By the Rev. P. W. Unwin, M.A. Cantab., Assistant Master on the Military and Civil Side of Cheltenham College. 4s. 6d. George Bell.

["To provide the *general* student with a carefully graduated course of instruction." Covers Stage I. of the Board of Education Examination. Easy examples to each chapter. Supplementary (advanced) volume in preparation.]

Komplex-Symbolik: eine Einführung in die analytische Geometrie mehrdimensionaler Räume. Von Roland Weitzenbock, K. und K. Leutnant im Pionierbataillon Nr. 2, Linz a. d. Donau. M. 4.80 geb. Leipzig: Göschen (Sammlung Schubert LVII.).

Kurven, Ebene, Spezielle. Von Dr. Heinrich Wieleitner, Gymnasiallehrer am hum. Gymnasium, Speyer. M. 12. Leipzig: Göschen (Sammlung Schubert LVI.).

SCIENCE.

Botany, Elementary. By E. Drabble, D.Sc., F.L.S., Lecturer in Economic Botany in the University of Liverpool. 2s. 6d. Edward Arnold.

[Covers Oxford and Cambridge Junior Local Examinations. Simple and lucid description; simple experiments. Attractive.]

Botany, Practical, Elementary. By Wm. E. Clarke, A.R.C.Sc. Lond., Science Master, Kirton Grammar School, Lincs., late Lecturer under the Middlesex Education Committee and the L.C.C. 3s. 6d. net. Normal Press.

[Simple, careful; 227 figures; test questions numerous.]

Chemistry, A History of. By Dr. Hugo Bauer, Royal Technical Institute, Stuttgart. Translated by R. V. Stanford, B.Sc. Lond., Priestley Research Scholar of the University of Birmingham. 3s. 6d. net. Edward Arnold.

[Outline of the general development. Interesting.]

Chemistry, An Intermediate Course of Laboratory Work in. By Edward Kenneth Hanson, M.A. Cantab., F.I.C., Teacher's Diploma (Lond.), Lecturer to the Cambridge University Local Lecture Syndicate, and John Wallis Dodgson, B.Sc. Lond., Director of Evening Classes and Lecturer in Chemistry, University College, Reading. 3s. 6d. Longmans.

[Built up on experience; "in use in manuscript form for three years." Broadly covers Intermediate Science (London). Markedly thoughtful and careful.]

Electricity, Sound, and Light: A Short University Course in. By Robert A. Millikan, Ph.D., Associate Professor of Physics in the University of Chicago, and John Mills, A.M., Instructor in Physics in the Western Reserve University. 8s. 6d. Ginn.

["An attempt to secure a satisfactory articulation of the laboratory and classroom phases of instruction in physics," while "presenting a complete logical development, from the standpoint of theory as well as experiment, of the subjects indicated in the title." Analytical rather than descriptive. No mathematics beyond trigonometry presupposed. Many examples and problems. 250 figures. Able.]

Living Matter, The Functional Inertia of: a Contribution to the Physiological Theory of Life. By David Fraser Harris, M.B., C.M., M.D., &c., Lecturer on Physiology and Normal Histology in the University of St. Andrews. 5s. net. Churchill.

["Functional inertia is as fundamental, primary, and primitive a property of protoplasm as is affectability." Extremely interesting and fresh monograph.]

EDUCATION.

Assistant Mistresses in Public Secondary Schools, Association of; Report of 25th year's work and of 25th Annual Meeting.

Board of Education.—(1) Statistics of the Certificate Examination for Teachers in Elementary Schools, 1907. 6d. (2) Statistics of Public Education in England and Wales, 1906-7-8: Part II., Financial Statistics. Cd. 4506. 9d. (3) Report of the Board of Education for 1907-8. Cd. 4566. 7d. Wyman.

Carnegie Foundation for the Advancement of Learning: Third Annual Report of the President and Treasurer. 1908. 576 Fifth Avenue, New York City.

Child Life, Wastage of: a Series of Articles upon its Causation and Prevention. By J. Johnston, M.D. Edin. 6d. net. Heywood.

Disadvantages of Education, The. Paper read before the Manchester Principal Teachers' Association (Feb. 12). By his Honour Judge Edward A. Parry. 3d. net. Sherratt & Hughes.

English Association, The. Bulletin 7: Report of the General Meeting (Jan. 15, 16), and the Executive Committee, 1908, with Proceedings of Committees and Branches, Bibliography, &c.

New South Wales, Report upon the physical condition of children attending Public Schools in (with special reference to height, weight, and vision): based upon statistics obtained as a result of the introduction of a scheme of medical inspection of public-school children, 1907-8. With Anthropometric Tables and Diagrams. Issued by direction of the Minister of Public Instruction. Sydney: W. A. Gullick, Government Printer.

MATHEMATICS.

16587. (Professor E. B. ESCOTT.)—Factorize

14^8+14^5+1, $7^8+2.7^5+1$, $7^{16}+2.7^9+1$, $7^8+7^5.2^{17}+2^{32}$.

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

The four proposed numbers (N) are all expressible as Dimorph Sextans—*i.e.*, as

$$N = (x^6+y^6)/(x^2+y^2) = (x^6+z^6)/(x^2+z^2);$$

and are therefore (algebraically) resolvable into two factors. See the author's Solution of Question 16277 in the *Reprint*, Vol. XIV., p. 36.

Write $x = x'^2+y'^2$, $y = x'^2-y'^2$; then

$$N = (x^6+y^6)/(x^2+y^2) = x^4-x^2y^2+y^4 = x'^8+14x'^4y'^4+y'^8.$$

Now, take x', y', such that $z = 2x'y'$. Then it is shown (in the Solution quoted) that N has the above double form and is resolvable into two factors $N = (x^2-yz)(x^2+yz) = L, M$.

When x', y' are both odd, then x, y, z are all even, and N is divisible by 16, and each of its factors L, M by 4. Also $z = 2x'y'$ always.

The Table below shows the elements x', y'; x, y, z, and the resulting factors L, M of the four proposed numbers N derived from the above,

x'	y'	x	y	z	L	M
14,	1	197,	195,	28	33349;	44269;
7,	1	50,	48,	14	4.457;	4.13.61;
49,	1	2402,	2400,	98	4.829.1669;	4.13.37.3121;
7,	16	305,	207,	224	13.37.97;	139393;

From the above it is clear that the two following forms are similarly factorizable $(14^{8n}+14^{4n+1}+1)$, $(7^{8n}+2.7^{4n+1}+1)$.

Dr. T. STUART and the PROPOSER give the Solution thus:—

Since $(\alpha^2+\beta^2)^4 \equiv \alpha^8+4\alpha^6\beta^2+6\alpha^4\beta^4+4\alpha^2\beta^6+\beta^8$

$\equiv (\alpha^8+14\alpha^4\beta^4+\beta^8)+4\alpha^2\beta^2(\alpha^4-2\alpha^2\beta^2+\beta^4)$;

therefore $N = \alpha^8+14\alpha^4\beta^4+\beta^8 \equiv (\alpha^2+\beta^2)^4-[2\alpha\beta(\alpha^2-\beta^2)]^2 = n_1.n_2$,

where
$$\left.\begin{aligned} n_1 &= \alpha^4+2\alpha^3\beta+2\alpha^2\beta^2-2\alpha\beta^3+\beta^4 \\ n_2 &= \alpha^4-2\alpha^3\beta+2\alpha^2\beta^2+2\alpha\beta^3+\beta^4 \end{aligned}\right\} \quad \ldots\ldots(1).$$

And since $n_1 = (\alpha^2+\alpha\beta)^2+(\beta^2-\alpha\beta)^2 = (\alpha^2+\alpha\beta-\beta^2)^2+3(\alpha\beta)^2$

$= (\alpha^2-\beta^2-2\alpha\beta)^2+6\alpha\beta(\alpha^2-\beta^2)$ $\ldots\ldots(2)$.

and $n_2 = (\alpha^2-\alpha\beta)^2+(\beta^2+\alpha\beta)^2 = (\alpha^2-\alpha\beta+\beta^2)^2+3(\alpha\beta)^2$

$= (\alpha^2-\beta^2+2\alpha\beta)^2-6\alpha\beta(\alpha^2-\beta^2)$ $\ldots\ldots(3)$.

it follows that every odd prime factor of n_1 or n_2 is of the form 1 (mod 12); and that, if $\alpha = \lambda^2$, $\beta = \mu^2$, $\lambda^4-\mu^4 = 6z^2$, then n_1, n_2 are each further decomposable into two factors, and so N into four factors.

Examples.—

(*a*) $\alpha = 14$, $\beta = 1$,

$N = 14^8+14^5+1 = (197)^4-(5460)^2 = (33349)(44269)$.

(*b*) $\alpha = 7$, $\beta = 1$,

$N = 7^8+2.7^5+1 = (2500)^2-(672)^2 = 2^4(793)(457) = 2^4.13.61.457$.

(*c*) $\alpha = 7^2$, $\beta = 1$,

$7^{16}+14.7^8+1 = 7^{16}+2.7^9+1 = 2^4.1501201.1383601$.

Here $\alpha^2-\beta^2 = 7^4-1 = 2400 = 6(20)^2$,

and hence $n_1 = 2450^2+48^2 = 2302^2+840^2$, from (2) and (3);

$n_2 = 2498^2-840^2$, from (3);

giving $n_1 = 2^2.37.40573 = 2^2.37(13.3121)$,

$n_2 = 2^2.829.1669$.

Hence $N = 7^{16}+2.7^9+1 = 2^4.13.37.829.1669.3121$.

(*d*) $\alpha = 7$, $\beta = 2^4$,

$N = 7^8+7^5.2^{17}+2^{32} = (93025)^2-(46368)^2 = 46657.139393$

$= 13.37.97.139393$.

16402. (Professor NANSON.)—If $u_1, u_2, \ldots, u_n, v$ are $n+1$ quadratic functions of x, show that the value of

$$\int \frac{u_1 u_2 \ldots u_n}{v^{n+1}}\,dx$$

is algebraic, provided v is harmonically related to one of the u's.

Note by G. H. HARDY, M.A.

The result stated in this Question is not quite accurate, as is easily seen by an example. Let

$u_1 = a_1x^2+c_1$, $u_2 = a_2x^2+2b_2x+c_2$, $v = x$.

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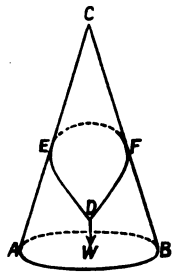
Then the coefficient of $1/x$ in u_1u_2/v^3 is $a_1c_2+a_2c_1$, and $\int u_1u_2v^{-3}dx$ will be rational only if $a_1c_2+a_2c_1=0$, *i.e.*, if u_2 as well as v is harmonically related to u_1.

The Proposer's argument, "Now operate on $\int u_1v^{-2}dx$ with $a_r\partial/\partial a+b_r\partial/\partial b+c_r\partial/\partial c$, ...," is unsound because (if a_1, b_1, c_1 are supposed given) a, b, c are not independent, being, in fact, connected by the relation $ac_1+ca_1=2bb_1$. The correct form of the result, viz.,

$$\text{"}\int\frac{u_1u_2\dots u_n}{v^{n+1}}\,dx$$

is rational if *all* the quadratics are harmonically related to any one in the numerator," is stated in my pamphlet, "The Integration of Functions of a Single Variable" (*Camb. Math. Tracts*, No. 2, 1905, p. 16).

16547. (Colonel R. L. Hippisley.)—ABC is a right cone firmly fixed upright upon its base. A weight W is supported by a loop of string DEF thrown over the cone. Neglecting friction, show that the suspension is safe if the apical angle of the cone is less than 60°, and unsafe if the angle is greater than 60°.



Solution by M. T. Naraniengar, M.A.

By considering the equilibrium of any portion of the string, it will be seen that the perpendiculars from C on the tangents at the extremities are equal. Hence the ultimate form of the loop may be derived as follows:—

Imagine a right-angled triangle CGD, right-angled at G, such that, when wrapped round the cone in question, CG, CD are opposite generators of the cone. Then the curve formed by GD will represent half the loop determined by the question.

Now the condition that the above construction may be possible is that $\angle GCD = (\frac{1}{2}$ circumference of base$) \div$ (slant side$) = \pi\sin\alpha$, where α = semi-apical angle of cone.

Thus $\angle GCD$ should be acute; therefore $\pi\sin\alpha < \frac{1}{2}\pi$.

Therefore $\sin\alpha < \frac{1}{2}$; therefore $\alpha < 30°$; therefore $2\alpha < 60°$.

The following Solution is due to the Proposer:—

The loop will follow a geodesic line, which will be a straight line upon the developed surface of the cone. If the surface be cut along a straight line through C and D and unwrapped, it will form the sector of a circle whose angular extent is $2\pi\sin\alpha$, where 2α is the apical angle of the cone; and, if $2\pi\sin\alpha = \pi$, the track of the string will pass through C. Hence, if $\sin\alpha$ is greater than $\frac{1}{2}$, the loop will slip over the apex of the cone. In the same way it may be shown that, if the loop passes twice round the cone like a double necklace, the critical value of α is $\sin^{-1}\frac{1}{4}$, or about 14° 30′.

16491. (H. Stanley Redgrove, B.Sc.)—It is required to determine the values of a and b. Experiments are carried out with the following results:—

Experiment 1: $a = -34{\cdot}3$. Experiment 3: $b = -86{\cdot}8$.
Experiment 2: $a = -31{\cdot}9$. Experiment 4: $b = -85{\cdot}1$.
Experiment 5: $a - 2b = 135{\cdot}8$.

Calculate from these data the most probable values of a and b.

Solution by the Proposer.

Let A and B be the most probable values of a and b respectively; then, by Legendre's principle of least squares,

$$(A+34{\cdot}3)^2+(A+31{\cdot}9)^2+(B+86{\cdot}8)^2+(B+85{\cdot}1)^2+(A-2B-135{\cdot}8)^2,$$

namely, the sum of the squares of the individual errors, must be at a minimum. Therefore $3A^2-139{\cdot}2A+6B^2+887{\cdot}0B-4AB+$ (a number) must be at a minimum, so that, if this expression is represented by u,

$$\delta u/\delta A = 0, \quad \delta u/\delta B = 0.$$

Hence $6A-139{\cdot}2-4B=0$, $12B+887{\cdot}0-4A=0$.

Solving simultaneously, the values of A and B, namely, $A=-33{\cdot}5$, $B=-85{\cdot}1$, are obtained.

10585. (J. J. Barniville.)—The asymptotes of three equilateral hyperbolas coincide in pairs so as to form an equilateral triangle; the trilinear equation of the curve being $\alpha\beta\gamma \pm d^3 = 0$, find the intercepted area.

Solution by M. T. Naraniengar, M.A.

The Question seems to be ambiguous. It ought to read "*three equal hyperbolas*" instead of "three *equilateral* hyperbolas."

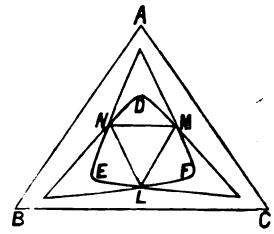
With this correction the equation to any hyperbola will be (i.) $\alpha\beta = d^2$, (ii.) $\beta\gamma = d^2$, or (iii.) $\gamma\alpha = d^2$. Their points of intersection L, M, N are obtained by solving (i.), (ii.), (iii.) simultaneously two at a time. Thus L is found from $\alpha\beta = d^2 = \gamma\alpha$; therefore $\beta = \gamma$ and $\alpha+\beta+\gamma = h$ (height of the triangle). Therefore

$$\alpha + 2d^2/\alpha = h;$$

therefore $\alpha = \frac{1}{2}\{h \pm (h^2-8d^2)^{\frac{1}{2}}\}$.

Hence the distance of L from BC is

$$\tfrac{1}{2}\{h-(h^2-8d^2)^{\frac{1}{2}}\} = h_1 \text{ (say)}.$$



The enclosed area is easily found by considering the figure DEF as made up of three hyperbolic segments *plus* the triangle LMN.

$$\text{Area} = (d^2-h_1^2)\,h/(h_1\sin 60°) - 8d^2\log(d/h_1).$$

12043. (J. Griffiths, M.A.) — If u_n, u_{n-1} denote rational and integral functions of two variables, of the degrees n and $n-1$ respectively, prove, by means of the substitutions

$$x = \frac{\xi u_{n-1}(\xi,\eta)}{u_n(\xi,\eta)}, \quad y = \frac{\eta, u_{n-1}(\xi,\eta)}{u_n(\xi,\eta)},$$

that the curve expressed by the equation $u_n(x,y) = u_{n-1}(x,y)$ is unicursal.

Solution by Professor Nanson.

Writing $x=t\xi$, $y=t\eta$, the curve $u_n(x,y)=u_{n-1}(x,y)$ gives

$$tu_n(\xi,\eta) = u_{n-1}(\xi,\eta);$$

whence the result stated is obvious.

16182. (W. F. Beard, M.A.)—ABC is a triangle with AB = AC; any tangent to the in-circle whose centre is I meets BC, CA, AB at D, E, F. Prove that DI bisects the angle EIF. Generalize, if possible.

General Discussion by C. M. Vijendra Rao.

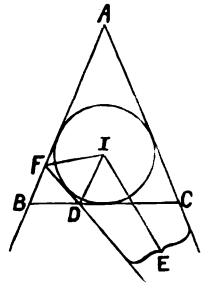
Case I.—When the circle concerned is the in-circle as in original problem.

Fig. 1.—When D is between E and F.

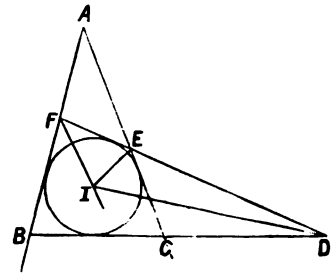
Since I is an ex-centre of triangle BDF,

$$\angle DIF = 90°-B/2 = \tfrac{1}{2}(180°-B/2-C/2) = \tfrac{1}{2}(90°+A/2) = \tfrac{1}{2}\angle EIF,$$

for I is the in-centre of triangle AEF; therefore DI bisects $\angle EIF$.



Case I., Fig. 1.



Case I., Fig. 2.

Fig. 2.—When D has E and F on the same side of it.

Exterior angle at I of $\triangle EIF = 180°-\angle EIF = 180°-(90°-A/2)$, for I is an ex-centre of triangle AEF

$$= 90°+A/2 = A+B/2+C/2 = A+B.$$

Also

$$\angle DIE = \angle DIF-\angle EIF = (90°+B/2)-(90°-A/2) = A/2+B/2$$
$$= \tfrac{1}{2}(A+B) = \tfrac{1}{2}\text{ exterior angle at I of } \triangle EIF;$$

therefore DI bisects the exterior angle at I of $\triangle EIF$.

Case II.—When the circle concerned is an ex-circle.

Fig. 1.—When D is between E and F.

I being an ex-centre of triangle CDE,

$$\angle DIE = 90°-DCE/2 = 90°-(A+B)/2 = C/2 = \tfrac{1}{2}C = \tfrac{1}{2}(90°-A/2)$$
$$= \tfrac{1}{2}\angle EIF,$$

for I is an ex-centre of triangle AEF; therefore DI bisects $\angle EIF$.

Fig. 2.—When D has E and F on the same side of it.

Exterior angle at I of $\triangle EIF = 180°-\angle EIF = 180°-(90°+\frac{1}{2}A)$, for I is the in-centre of triangle AEF $= 90°-\frac{1}{2}A = C$.

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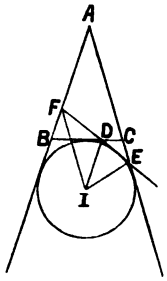
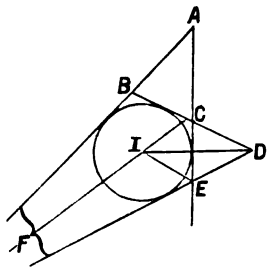
Also $\angle DIE = \angle DIF - \angle EIF = (90° + \frac{1}{2}FBC) - (90° + \frac{1}{2}A)$
$= \frac{1}{2}(A + C) - \frac{1}{2}A = \frac{1}{2}C = \frac{1}{2}$ exterior angle at I of $\triangle EIF$;
therefore DI bisects exterior $\angle EIF$.



Case II., Fig. 1.



Case II., Fig. 2.

The theorem is thus true in the case of ex-circles also.

11602. (J. J. Walker, M.A., F.R.S.)—Show how to form, say in the case of three or four linear equations, the cubic or biquadratic whose roots shall be the values of the three or four unknown quantities—of course, without assuming the usual solutions of those linear equations.

Solution by Professor Sanjána, M.A.

Taking the case of a cubic, let the roots of $\theta^3 + p\theta^2 - q\theta + \frac{1}{3}r = 0$ be connected by the linear system $a_k x + b_k y + c_k z + d_k = 0$ $(k = 1, 2, 3)$.

As $x + y + z + p = 0$, we get, by elimination,

$$\begin{vmatrix} 1 & 1 & 1 & p \\ a_1 & b_1 & c_1 & d_1 \\ a_2 & b_2 & c_2 & d_2 \\ a_3 & b_3 & c_3 & d_3 \end{vmatrix} = 0,$$

which at once gives

$$(a_1b_2c_3)\,p + (b_1c_2d_3) + (c_1d_2a_3) + (d_1a_2b_3) = 0.$$

Again, combining $s.x + x.y + y.z + q = 0$ with the linear system, we have

$$\begin{vmatrix} z & x & y & q \\ a_1 & b_1 & c_1 & d_1 \\ a_2 & b_2 & c_2 & d_2 \\ a_3 & b_3 & c_3 & d_3 \end{vmatrix} = 0,$$

whence $z(b_1c_2d_3) + x(c_1d_2a_3) + y(d_1a_2b_3) + q(a_1b_2c_3) = 0.$

This should be again taken as a fourth linear equation, giving

$$q(a_1b_2c_3)^2 + (b_1c_2d_3)(c_1d_2a_3) + (d_1a_2b_3)(c_1d_2a_3) + (b_1c_2d_3)(d_1a_2b_3) = 0.$$

Thus p and q are determined. Finally, combine $yz.x + zx.y + xy.z + r = 0$ with the given linear system, and the resultant with it again, and so on; we shall obtain

$$r(a_1b_2c_3)^3 + 3(b_1c_2d_3)(c_1d_2a_3)(d_1a_2b_3) = 0.$$

Obviously the method can be applied to equations of higher and higher degree; the process, however, grows more and more tedious.

16571. (W. J. Greenstreet, M.A.)—If $\Sigma a = \Sigma x = \Sigma ax = 0$, then

$$\Sigma ax^7 = xyz\,\Sigma x^2\,\Sigma ax^2.$$

Solutions (I.) *by* R. F. Davis, M.A., *and* C. M. Ross; (II.) *by* M. T. Naraniengar, M.A.

(I.) The condition $\Sigma x = 0$ leads to the equation

$$x^3 + x(yz + zx + xy) - xyz = 0$$

and two similar equations. Multiply successively the first equation by ax^n, the second by by^n, the third by cz^n $(n = 0, 1, 2, 4)$, and add results.

Then, putting $yz + zx + xy = q$ and $xyz = r$,

$$\Sigma ax^3 = 0, \quad \Sigma ax^4 = -q\,\Sigma ax^2, \quad \Sigma ax^5 = r\,\Sigma ax^2,$$

and $$\Sigma ax^7 = -2qr\,\Sigma ax^2 = xyz\,\Sigma x^2\,\Sigma ax^2,$$

since $\Sigma x^2 = -2q$.

(II.) Since $\Sigma a = \Sigma x = \Sigma ax = 0$, we have

$$\frac{a}{y-z} = \frac{b}{z-x} = \frac{c}{x-y} = \lambda \text{ (say)};$$

therefore $$\Sigma ax^7 = \lambda\,\Sigma x^7(y-z) = \lambda\,\Sigma x^7(y-z)\,H_5,$$

where H_5 = sum of the homogeneous products of 5 dimensions in x, y, z
$= \Sigma x^5 + \Sigma x^4(y+z) + \Sigma x^3yz + \Sigma x^3y^2 + \Sigma x^2y^2z.$

Now $$\Sigma x^4(y+z) = -\Sigma x^4x = -\Sigma x^5, \quad \Sigma x^3yz = xyz\,\Sigma x^2,$$
$$\Sigma x^3y^2 = \Sigma x^2y^2(x+y) = -\Sigma x^2y^2z.$$

Therefore $$H_5 = xyz\,\Sigma x^2;$$

therefore $$\Sigma ax^7 = \lambda\,\Sigma x^2(y-z)\,H_5 = \Sigma ax^2\,xyz\,\Sigma x^2.$$

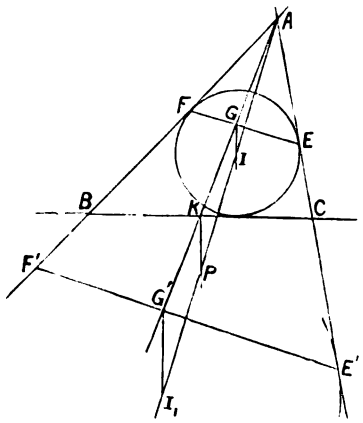
15782. (A. M. Nesbitt, M.A.)—The inscribed circle of a triangle ABC touches the sides AC, AB in E and F, and an escribed circle touches the same sides produced in E′ and F′. If the median AK cut EF in G and E′F′ in G′, prove that BGCG′ is a parallelogram.

Additional Solution by W. Austin Sleigh, B.A.

Let I_1 be the ex-centre, P the mid-point of II_1.

Then PK is perpendicular to BC. But GI, G′I_1 are also perpendicular to BC, and therefore parallel to PK.

Hence K is mid-point of GG′ and BC.



16509. (Professor R. W. Genese, M.A.)—From a point P perpendiculars are drawn to the faces of a given tetrahedron. The feet of the perpendiculars lie in one plane. Prove that the locus of P is a cubic surface containing the edges of the tetrahedron.

Solutions (I.) *by* W. H. Blythe, M.A.; (II.) *by* L. Isserlis, B.A., *and* A. M. Nesbitt, M.A.

(I.) Take tetrahedral co-ordinates. Let X, Y, Z, W be the co-ordinates of any point. Let A, B, C, D be the areas of the faces of the tetrahedron; bA, cA, dA being the projections of B, C, D respectively upon A, so that $b + c + d = 1$. The co-ordinates of the foot of the perpendicular from X, Y, Z, W upon the face A are 0, Y + bX, Z + cX, W + dX.

Expressing the co-ordinates of the feet of the perpendiculars upon the four faces as a determinant, we find the condition that the four points lie in one plane. Adding the four columns we find that X + Y + Z + W is a factor. Therefore the remaining factor, being of the third degree, represents a cubic surface; and, if any pair of the quantities X, Y, Z, W vanish, two columns become identical. Therefore the surface contains the edges of the tetrahedron.

(II.) Let $u_r \equiv l_r x + m_r y + n_r z - p_r = 0$;

$r = 1, 2, 3, 4$ be the four faces of the tetrahedron.

The x coordinate at the foot of the perpendicular from P(XYZ) on face 1 is $x_1 = X + l_1(p_1 - l_1X - m_1Y - n_1Z)$ or $x_1 = X - l_1u_1$.

Hence the four points are coplanar if

$$\begin{vmatrix} X - l_1u_1 & X - l_2u_2 & X - l_3u_3 & X - l_4u_4 \\ Y - m_1u_1 & Y - m_2u_2 & Y - m_3u_3 & Y - m_4u_4 \\ Z - n_1u_1 & Z - n_2u_2 & Z - n_3u_3 & Z - n_4u_4 \\ 1 & 1 & 1 & 1 \end{vmatrix} = 0,$$

the equation to a cubic surface, which is obviously satisfied if XYZ is such as to make u_1, u_2 vanish simultaneously; *i.e.*, the cubic surface contains the edges of the tetrahedron.

16576. (Professor Neuberg.)—Une parabole P touche les côtés de l'angle xOy aux points donnés A et B; une seconde parabole P′ touche ces côtés en C et D. Construire le troisième tangente commune aux deux paraboles.

Solutions (I.) *by* R. F. Davis, M.A.; (II.) *by* M. T. Naraniengar, M.A.

(I.) If P be any point in AB, and PM, PN be drawn parallel to OA, OB respectively, meeting OB, OA respectively in M, N, then MN is a tangent to the parabola, having OA, OB for tangents and AB their chord of contact. (Milne and Davis, *Parabola*.) Therefore let AB, CD intersect in H, and draw HY, HZ parallel to Ox, Oy respectively, meeting Oy, Ox respectively in Y, Z. Then YZ is a common tangent to the two parabolas.

(II.) Using oblique coordinates, we have $\xi/x + \eta/y = 1$ for the tangent, where $x/a + y/b = 1$ and $x/c + y/d = 1$. (a, b, c, d denote OA, OB, OC, OD respectively.)

QUESTIONS FOR SOLUTION.

16621. (Professor R. W. Genese, M.A.)—To a passenger in a train, moving uniformly, a rope in a parallel plane appears on the window to rotate uniformly. Prove that it hangs in a catenary of equal strength.

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16622. (C. M. Ross.)—Find the value of the double integral

$$\int_0^{\frac{1}{4}\pi}\int_0^{\frac{1}{4}\pi} \frac{\sin x \cos x \, dx \, dy}{(1-\sin^2 x \sin^2 y)^{\frac{1}{2}}}.$$

16623. (G. N. Watson, B.A.)—Prove that

$$1+\sum_{n=1}^{\infty}\left(\frac{1.3.5\ldots(2n-1)}{2.4.6\ldots(2n)}\right)^3 = \{\Gamma(\tfrac{1}{4})\}^4 \div 4\pi^3,$$

where Γ denotes Euler's gamma-function.

16624. (Lt.-Col. Allan Cunningham, R.E.)—Solve, in integers,

$$N = (x^6+y^6) \div (x^2+y^2) = (x^6+z^6) \div (x^2+z^2),$$

with $6xy = \square$ and $y \neq z$. Give an example with $N > 10^{14}$ resolved into prime factors.

16625. ("λ, μ.") — Factorize the following polynomials for the values specified :—

(1) $4x^8+3x^7+7x^6+9x^5+6x^4+9x^3+7x^2+3x+4$ when $x = 17a^2$;

(2) $4x^6+3x^5+6x^4+x^3+6x^2+3x+4$ when $x = 13a^2$;

(3) $x^8-6x^7-x^6+3x^5+7x^4-5x^3-2x^2-3x+4$ when $x = 19a^2$;

(4) $4x^6-14x^5+5x^4+14x^3+5x^2-14x+4$ when $x = 2a^2$.

16626. (Professor E. Hernández.)—On donne un nombre composé de trois tranches de n chiffres, qu'à partir de la première tranche à droite sont trois nombres entiers consécutifs. On renverse les tranches, mais sans changer l'ordre de leurs chiffres. La différence entre ce nouveau nombre et le proposé est $2(10^{2n}-1)$.

16627. (Professor E. B. Escott.)—For what values of d will the following equations have equal roots?—

$$bx+cy+az = d, \quad cx+ay+bz = d, \quad xy+yz+zx = d.$$

16628. (Professor Cochez.) — α, β, γ étant les racines de $x^3+px+q = 0$, calculer

$$(\alpha^2-\beta^2)(\alpha^2-\gamma^2)+(\beta^2-\alpha^2)(\beta^2-\gamma^2)+(\gamma^2-\alpha^2)(\gamma^2-\beta^2).$$

16629. (Professor M. T. Naraniengar, M.A. Suggested by Question 16392.)—In a limaçon PQR is an inscribed triangle having the focus for orthocentre. Prove that the circum-circle of PQR touches two fixed circles, having their centres on the axis of the limaçon, and that the locus of the centre of PQR is a conic with the centres of the fixed circles for foci.

16630. (Professor Nanson.)—A circle moves in a plane so that its radius is a given function of the arc of the path described by its centre. Find the condition for the ultimate intersection of the circles.

16631. (Professor Sanjána, M.A.)—Given the triangular co-ordinates of three points, show how to find those of any point related to the trigon formed by them (*e.g.*, the orthocentre, circum-centre, &c.).

16632. (W. F. Beard, M.A.)—Prove that the point P mentioned in Question 16599 is the fourth point of intersection of the circum-circle of ABC with the ellipse through ABC, with its centre at the centroid of ABC.

16633. (S. Narayana Aiyar.)—If V_1, V_2 be the volumes generated by the revolution of an area A about any two corresponding tangents drawn from any point on the mutual orthoptic circle of two confocal conics, show that $V_1^2+V_2^2+4\pi A(p_1V_1+p_2V_2)$ is constant, where p_1, p_2 are the perpendiculars from the centre of the conics on the tangents.

16634. (A. M. Nesbitt, M.A.)—A conic which has a principal axis parallel to the axis of a parabola has contact of the second order with the parabola at a point P. Prove that, whatever be its eccentricity, the two curves will intersect again in a fixed point. If the eccentricity be fixed by the relation $e^2 = 1-f$, prove that the locus of the centre for varying positions of P will be $4(x^2-2fc)^3 = 27cf^2y^2$ or $4(fx^2-2c)^3 = 27cfy^2$, according as the major or the minor axis of the osculating conic be parallel to the axis of the parabola, 4c being the latus rectum of the latter curve.

16635. (R. F. Davis, M.A.)—S is a point within a given triangle ABC, and AS intersects the circum-circle in T. Prove that the major axis of the ellipse, having S as focus and touching the sides of ABC, is SB.SC/ST.

16636. (M. V. Arunachalan, M.A.)—Find a point D in the base BC of a triangle such that, if DE, DF be drawn parallel to AB, AC meeting AC, AB in E, F respectively, EF may be antiparallel to BC.

16637. (Saradakanta Ganguli, M.A. Suggested by Question 16182.)—If the in-centre of an equilateral triangle be joined to the points where *any* tangent to the in-circle cuts the sides of the triangle, then each pair of the joining straight lines will include an angle of 60° between them.

16638. (D. Biddle.)—ABC is a given plane triangle. (1) Within its area construct another triangle A'B'C' such that A', B', C' shall be the respective mid-points of the joins C'A, A'B, B'C. (2) Find the invariable ratio of the areas. But (3) trace the divergence of the pairs of points (which are usually designated by O, I, H, G in any single triangle), according as the original triangle varies from the equilateral type.

16639. (Professor Neuberg.)—On considère des tetraèdres OABC de même volume et dont les arêtes OA, OB, OC sont dirigées suivant les mêmes axes rectangulaires Ox, Oy, Oz. Trouver l'enveloppe des sphères circonscrites.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11265. (Professor Harkema.)—Find the time before its rising at which the sun is at a given distance below the horizon, and hence obtain the increase of the length of day due to refraction. Show that this increase varies for different places as the geometric mean between the secants of the sun's zenith and nadir distances at midday and midnight respectively.

11524. (Professor Ramaswami Aiyar, M.A.)—Let D, Δ be two matrices, each containing n columns and $n+1$ rows; and D_r, Δ_r denote the determinants obtained by omitting the rth rows of D, Δ. Given that the matrical product of every two non-corresponding rows of D, Δ is equal to unity, prove that

$$D_1 : \Delta_1 = \ldots = D_r : \Delta_r = \ldots = D_{n+1} : \Delta_{n+1}.$$

11604. (J. Tate, M.A.)—The sides AB, BC, CD, DA of a spherical quadrilateral formed by arcs of great circles are divided internally at E, F, G, H respectively so that

$$\sin AE/\sin BE = \sin CF/\sin BF = \sin CG/\sin DG = \sin AH/\sin DH = \lambda.$$

Prove that the arcs EG, FH intersect in a point I lying on the arc KL, where K and L are the middle points of the diagonals, and that, if the diagonals be equal, $\sin KL/\sin LI = \lambda$.

11701. (Professor Bôcher.)—Solve the differential equations—

$$\frac{d^2y}{dx^2}+\tfrac{1}{2}\left(\frac{1}{x-a}+\frac{1}{x-b}\right)\frac{dy}{dx}-\frac{1}{4(x-a)(x-b)}y = 0,$$

$$\frac{d^2y}{dx^2}+\tfrac{1}{2}\left(\frac{1}{x-a}+\frac{1}{x-b}+\frac{1}{x-c}\right)\frac{dy}{dx}+\frac{-3x+a+b+c}{16(x-a)(x-b)(x-c)}y = 0.$$

12267. (Professor Orchard, M.A., B.Sc.)—A mass of 3 lb. is placed upon a wedge of mass 6 lb., the wedge itself resting on an inclined plane and having one face horizontal. If wedge and plane have each the same angle 45°, and both are smooth, compare the pressure between them with the sum of their masses.

12503. (Professor Matz, M.Sc., Ph.D.)—From a point in the circumference of a circular field, a projectile is thrown at random with a given velocity, which is such that the diameter of the field is equal to the greatest range of the projectile. Find whether the following chance is correct, which Todhunter gives, of its falling within the field :— $C = 2^{-1}-2\pi^{-1}(\sqrt{2}-1) = \cdot 236+\ldots$.

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Thursday, March 11th, 1909.—Prof. W. Burnside, Vice-President, in the Chair.

The following papers were communicated :—

"The Transformation of the Electrodynamical Equations and the Laws of Motion," Mr. H. Bateman.

"The Transformation of the Electrodynamic Equations of Moving Bodies," Mr. E. Cunningham.

"The Kinetic Image of a Convected Electric System formed in a Conducting Plane Sheet," Prof. J. Larmor.

"On an Integral Equation," Mr. G. H. Hardy.

"On Term-by-Term Integration of Oscillating Series," Dr. W. H. Young.

Mr. A. L. Dixon gave a preliminary account of "Some Further Researches in the Theory of Elimination."

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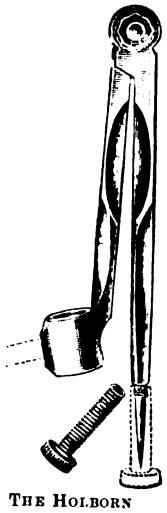

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IV. (Feb. 25.) *Representational Processes:* distinction between gathering and elaborating material: conception: the static and dynamic view of ideas: ideas as forces: changes in the activity of a given idea: copresentation and interplay of ideas: hierarchy of ideas: the fixed idea: marginal and focal ideas: the possibility of the subconscious influence of ideas.

V. (March 4.) *Soul-building:* nature and scope of association: usual limitation to ideas: really of general application: association makes habits possible: advantages and disadvantages of habit forming: the "growing point": accommodation and co-ordination: the old and the new laws of the association of ideas: Paulhan's view: manipulation of association in teaching.

VI. (March 11.) *Memory:* relation to personal identity: physical basis of memory: possibility of improving memory as a natural power: the associative and the rational memory: mnemonics and the *memoria technica:* mediate and immediate recall: temporary and permanent memory: the nature of the memory implied in "cram": rote-learning: relation between memory and general intelligence.

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VIII. (April 29.) *Regulation of Consciousness:* nature of attention: relation to interest: teachers' distrust of interest: confusion with pleasure: interest and attention as cause and effect: various classifications of the kinds of attention: the physiological basis of attention: the alternation between concentration and diffusion: possibility of degrees of attention.

IX. (May 6.) *Reasoning:* technical distinction between judgment and reasoning: both included in popular term *thinking:* fundamentally an adaptation of means to ends on the ideational plane: thinking may be called the purposive aspect of apperception: laws of thought as thought: the most fundamental law of all thinking: induction, deduction, and fallacies.

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The Educational Times.

How to teach Geometry.

Death of Euclid! Thus has an imaginative contemporary heralded the issue of a modest pennyworth of a White paper (Circular 711) by the Board of Education on the "Teaching of Geometry and Graphic Algebra in Secondary Schools." But, although the Circular states that the general effect of the recent changes in the treatment of geometry has been beneficial, it criticizes firmly not only those who cling uncritically to the older system, but also those who, "in thinking practical work everything, have sacrificed the training in rigid deduction which is an essential element in school geometry." The test of the value of this training is not the reproduction of memory work, but ability to solve new problems; and we are told that, unless this power has been developed, the study of the subject must be considered a failure. There appears to be a deplorable waste of time and energy through misconception as to what is desirable and attainable; and the reason here assigned is the unscientific method of dealing with the earlier stages. Hence this Circular.

A distinguishing feature of most modern schemes is the introduction of practical work with instruments. What is the result? Apparently a plethora of aimless constructional work. Practical work seems to be too often regarded as an end in itself—a thing to be done just for the doing of it. Very often, we are told, "a whole year is given to such work, sometimes even two. The results are seldom or never good, and the time may be regarded as pretty nearly wasted."

But, again, those who build on ready-made definitions, axioms, and postulates, and on proofs unsuited to the pupil, are in no better case. In forcing on a raw pupil what might very well be a fit subject of investigation for teachers themselves, they are shown to violate sound principles of teaching; they repel, and make boys think the whole subject artificial and unreal. So here, again, we have another serious obstacle to progress.

What is the remedy? The close interdependence between practice and theory should never be lost sight of: practice must be purposeful, and it must mean something much more than mere manipulation of compasses and set-squares. Real progress, in later stages as in earlier, demands that the student shall have a background of wide experience to draw upon, and, of course, he must not be artificially restricted to Flatland. With beginners vivid presentation of geometrical truths is everything: formal proofs fall flat; they are unconvincing and psychologically wrong. These and other such points are developed and illustrated in a full and fresh discussion of the fundamental propositions on which the subsequent reasoning is to be based (Euc. I., 13-15; 27-29, 32; 4, 8, 26). The work of these early stages is founded "entirely on careful observation of familiar things, experiment, and direct intuition."

The English, it has been alleged, never talk and cannot discuss. Now, open discussion has much to recommend it in mathematical as in other teaching. Let there be a discussion, say, as to what is necessary to fix a triangle or a piece of framework. Lead on to illustrations from the world of life—camp chairs, the opening of a door or a desk, woodwork joints, crank and connecting rod—and an observer will be struck by the keen interest aroused even in folk not particularly mathematical and by the vast amount of geometrical knowledge latent in a boy of twelve—a fund that is perhaps rarely drawn on to any considerable extent in school. Such a boy may easily outstrip his teacher, who however need not be alarmed thereby, for the lad, rightly treated, has sense enough to know that omniscience is not to be expected—even from a teacher. It is, we take it, this kind of teaching for the early stages of geometry that would be welcomed by the Board of Education, as it most certainly would by the ordinary pupil.

As to the subsequent stage—the general deductive development—the Circular says but little. It rightly urges that new truths shall be so presented that the pupil shall have full opportunity for original work; for thus only can he gain mathematical power and self-reliance. It follows, too, that closely related truths must be dealt with in natural groups and not artificially isolated—"an essential vice, for teaching purposes, of Euclid's order." Emphasis is laid on the importance of introducing, wherever possible, the idea of change or motion, and of cultivating the habit of considering the effect of gradual modification of a figure: in the diagonals

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of a parallelogram as the angle between adjacent sides alters, the modern idea of a tangent, and the like.

The Circular does not profess to be exhaustive, and it is concerned only with the common practice where the subject is begun at about twelve. But it will occur to some of our readers that much valuable preliminary work in geometry may be done before twelve; also that geometrical conceptions may enter largely into the teaching and illustrations of arithmetic and algebra, usefully replacing much arid matter still in vogue both in primary and in secondary schools. Again, the Circular does not point out the advantage of leading on to the consideration of the general truth from the consideration of particular and numerical examples—a procedure that is specially valuable in reasoning about angles.

Careful reflection will compel the admission that in its main outlines the scheme is both sound and practicable. It is infinitely better to speed on and get an outlook over the country than to toil slowly along ever in a world of only two dimensions. We hear of the practical study of aeronautics in the public schools: let us hitch on mathematics to real live interests wherever we can, and so engender enthusiasm in teacher and pupil alike. In all classes of schools, it must be acknowledged, the early study of mathematics is too bookish and not sufficiently realistic. Surely much of this might most profitably be replaced by a simple experimental course long before a child is twelve. The imagination is fired, not dulled, by suitable concrete helps; and simple apparatus which is capable of movement, or of depicting movement, is far more suggestive to teacher as well as to pupil than fixed figures ever can be. Mechanism is all about us: even children cannot escape it if they would—except in school, where it might be used so effectively and so pleasurably in developing mathematical notions.

The Circular also contains some illuminating hints on graphs, and keen criticism, not uncalled for, as to the usual treatment they receive. It richly deserves the thoughtful study of everybody that is interested in mathematical teaching.

NOTES.

THE appointment of the London University Commission has naturally revived the ancient and "strikingly divergent views of the proper relationship of examinations to education." It is a hopeless divergence, no doubt, for the controversy cannot be restricted to combatants that possess adequate knowledge and experience of the facts. Accordingly, "A Late Member of the Senate of the University of London" writes to a contemporary proposing a solution:

> The great need of the moment is that the Royal Commission should recognize that these two ideals of education—an external examining Board and a local teaching University—though temporarily combined and working without outward manifestations of strife, are as hopelessly at variance with each other as they have been at any time during the last fifty years. If this is recognized, and it is further agreed that each of these ideals manifesting itself in its appropriate institution can serve a really useful purpose in the State, it is surely a mistake to hamper the growth of each by insisting on their forces being combined in a single institution.

But why should one raise an outcry before one is hurt, or is at all likely to be hurt? If it be true—and it is certainly true—that the two ideals are as yet, in their "temporary" combination, "working without outward manifestations of strife" (or inward manifestations either, as may be confidently added), why not leave them alone? The internal growth of the University cannot and will not be allowed to be hampered by the external organization; but the external system has not, so far as is publicly known, been in any way hampered by the internal, or, we believe, in any way threatened with such a misfortune. While the internals are quite determined to develop their own side with absolute independence of action, that neither involves, nor is intended to involve, the imposition of the slightest disability upon externals. The whole fuss about equality of standard and of fairness in examinational proceedings is palpably destitute of basis in fact. The examination papers are open to the public; an external examiner is always conjoined with the teacher in the examination of internal students. An independent examining University seems, on the known facts, to be absolutely unnecessary.

THE continued connexion of University College and Training College is regarded by the Welsh Colleges Committee as "a matter of the utmost importance" both from the educational and from the financial point of view. Educationally: for "the intending teacher profits by receiving his or her education as one of a large body of students and in a place where various intellectual interests are represented"; and "for the teacher in training, whose course is marked out by authority, it is a great advantage to be associated with others who are more or less free to choose their subjects and to qualify themselves for advanced study." Financially: for "without the teachers in training the Arts side of the college would be much weaker than it is." The reasons are good enough: the first indeed may be accepted as conclusive and final. The value of the pronouncement lies in its confirmation of an opinion that has been widely accepted elsewhere. The teacher must be impressed with breadth of view and rescued from the fatal danger of a stereotyped narrowness of mind. The higher actual achievement in studies must always count; but it is of much less importance than the clear conviction of inadequacy of attainment and the establishment of a worthy ideal of aspiration.

A SUB-COMMITTEE of the Head Masters' Conference is reported to have adopted a recommendation to the effect that Greek should receive no more attention than French, Mathematics, or Science in the education of the public-school boy up to the age of sixteen. Whatever this may precisely mean, it points to a weakening in the position of Greek and a corresponding advance of the modern subjects. Whether or not the Conference will accept the recommendation remains to be seen. Very likely the results would be good for Greek as well as for its modern competitors. One cannot avoid a grave suspicion that Greek suffers (and causes the other subjects to suffer) through the too common educational vice of teaching excellent things at psychologically inappropriate ages and often to mentally recalcitrant victims. The learners of Greek should be a select number, and they should be well grounded in the common subjects before essaying the special study. Their progress would then be markedly accelerated.

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THE personal avowal of the President of the National Union of Teachers on the crux of educational reform has naturally stirred the smouldering embers of a futile controversy. Undoubtedly Mr. Hole is not by any means alone among thoughtful people in finding himself driven to this conclusion—the "civic" solution. The worst of it is, however, that this may turn out to be no solution at all; or, rather, if it be found a solution of the difficulty as between contending ecclesiastical parties, it may raise a still more serious difficulty between all such parties and the mass of the people, who, whatever they may think of "sectarian" teaching, certainly are not prepared for the exclusion of "religious" teaching from the schools. But is it the fact that all other solutions have failed? Certain solutions have indeed failed—in a sense. Still we must ask ourselves how it is that other countries manage to have religious teaching in their schools without any political trouble, and see whether we cannot go and do likewise. Moreover, it would be well to ascertain the actual results of the "secular" or "civic" solution in countries that have tried the experiment. Even with all our disagreements, are there not many people that have confidence that, if the teachers and the parents were left alone to regulate the matter on the basis of an agreed syllabus (such as has been found to work satisfactorily in various districts), the difficulties would promptly shrink out of sight and hearing?

THE Board of Education have reissued their sensible Circular enforcing the rational pronunciation of Latin in secondary schools. It is really amazing to have it bluntly laid down that Latin will not be officially reckoned as efficiently taught where quantity is ignored, and that teachers will not be considered qualified to teach Latin unless they can read Latin prose and verse without violating the quantities. The Board, we may take it, are not speaking without book; but in that case what of the teachers, and where and how can they have learnt their Latin? As to the pronunciation, we are no doubt getting forward, and can read with a certain detached amusement M. Victor Tourneur's description (in the March number of the *Revue de l'Université de Bruxelles*) of the five different types of Latin pronunciation prevalent in Belgium. "Pourrait-on concevoir une situation plus confuse?" he asks, hopelessly. And he proceeds:

> Cependant, de la prononciation d'une langue dépend sa physionomie musicale, la beauté de sa phrase et l'impression esthétique qu'elle produit sur l'auditeur. Même lorsqu'il s'agit d'une langue morte, on peut affirmer que la lecture muette d'un texte produit dans l'esprit des images de sons. Il résulte de ces constatations que, en général, le latin est perçu d'une manière erronée par la plus grande partie des peuples modernes. A de rares exceptions près, aucun de ceux qui lisent une ode d'Horace ne se représente exactement l'harmonie musicale qui la constitue.
>
> Et pourtant, l'enseignement ne deviendrait-il pas plus vivant, et la langue ne revêtirait-elle pas un attrait tout nouveau si on pouvait entendre retentir dans nos salles d'école telles qu'elles ont été prononcées les harangues que César adressait à ses troupes, le bâton d'imperator à la main, ou le plaidoyer par lequel Cicéron arracha à ce même César la grâce de Ligarius, ou bien encore les vers passionnés que Tibulle murmurait doucement à Délie.
>
> Je ne parlerai point de l'intérêt scientifique que présenterait une telle réforme; mais . . . Ne rirait-on pas sans pitié d'un Allemand qui apprendrait le français en le prononçant à l'anglaise? Or, c'est précisément ce que l'on fait faire à nos élèves pendant les sept ans qu'ils passent à l'Athénée. Et pourtant, il serait aisé de leur apprendre à lire le latin d'une manière exacte: il suffirait de leur en inculquer la prononciation correcte avec les premiers éléments.

The Board of Education do well to insist stringently on observance of the requirements set forth in the Circular.

THERE is only one remark that we care to make upon the insurrection at Ruskin College, and that is that we should like to believe that the incident is satisfactorily closed. The peaceful halls of Continental colleges are sometimes convulsed with warlike demonstrations, or closed by authority for months together. But in this country academic rebellions are happily most rare. A writer in the *Globe* has recalled a few instances of exceptional disturbance in our public schools, which are mellowed by remoteness in time. He tells us of a week of anarchy at Marlborough in 1851, when authority was defied, windows smashed, furniture demolished, and outbuildings fired—a demonstration against the withdrawal of certain privileges. At Harrow, in 1764, some two hundred of the senior boys are said to have seceded till a newly appointed head master, who had invaded their old customs, was sent about his business. Winchester, too, has annals of rebellion. The Warden cancelled the Easter holidays because of some slight trespass of a single boy. The outraged youths stormed his house and imprisoned him in his own dining room overnight, raised barricades, fortified the tower, loosened parapets, and so forth; but the High Sheriff, coming up with a company of soldiers, engineered an amnesty, the Warden acknowledging complete defeat. More than a century ago, Rugby boys, resenting a punishment, exploded the head master's study with gunpowder, and made a bonfire of his books, plus school furniture. A regiment from the town besieged the boys in a moated island, and the Riot Act was duly read for their edification. Boys will be boys: they have a keen sense of justice.

THE LATE MR. H. C. BOWEN.

MEMBERS of the educational profession will have heard with deep regret of the death of Mr. Herbert Courthope Bowen after a long illness. Mr. Bowen was born in 1848, and received his early education in Trinidad. He entered Corpus Christi College, Cambridge, in 1868; he was a scholar of his college, and graduated in 1870, taking a respectable place in the Mathematical Tripos. His natural bent was rather towards literature than towards mathematics, and he gave a juster measure of his real abilities by gaining shortly after his degree two University Essay prizes (the Le Bas and the Maitland). He early devoted himself to school work, and after some experience at Dulwich and elsewhere, he was in 1873 appointed second master of the Central Foundation School. In 1876 he was selected as the first head master of the Grocers' Company's School at Hackney Downs, a post he relinquished in 1881. Shortly afterwards he became Principal of the Finsbury Training College for Teachers in connexion with the Central Foundation School, the first organized attempt to give a complete training to intending teachers in secondary schools (1882–6). He also, during those and several subsequent years, gave lectures on education at Cambridge. His tenure of office, both at the Grocers' School and at the Finsbury Training College, was characterized by a high ideal of work and real enthusiasm, an enthusiasm which extended to education in general and to the advancement and consolidation of the scholastic profession. For more than twenty years he was a valued member of the Council of the College of Preceptors; he was one of the founders of the Teachers' Guild, in the work of which he always took a keen interest; and he was on the council of several other educational bodies. Mr. Bowen was also a frequent contributor to educational literature. His list of historical novels illustrating English history was much appreciated by teachers. He also published an annotated edition of Macaulay's "Essays on Clive and Hastings" and other school books. He was very familiar with pedagogic literature, and the college library owes much to his judicious advice.

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SUMMARY OF THE MONTH.

MR. ARMITAGE asked the President of the Board of Education (April 6) what was the percentage of income, under each of the following heads, during the year ending July 31, 1908, or the nearest date thereto, of teachers' training colleges not maintained by Local Education Authorities: endowments, voluntary subscriptions, students' fees and sale of books, Government grants, and other sources, if any, stating what the same are.

Mr. Runciman: Income of training colleges for elementary teachers in England and Wales, not maintained by Local Education Authorities, during the year ending July 31, 1908:—

Source of Income.	Amount.	Percentage.
Endowment	£1,003 16 8	·23
Voluntary subscriptions	26,422 10 2	6·13
Students' fees and sale of books	100,890 10 0	23·41
Government grant	301,287 18 10	69·91
Other sources	1,387 0 9	·32
Total	£430,991 16 5	100

In addition to the Government grant included above, a sum amounting to £53,189. 13s. 4d. was paid by the Board to various colleges during the year in respect of personal grant to day students not residents in hostels. "Other sources" of income include £453. 4s. 7d. "proceeds of sale of land"; the remainder consist mainly of bank interest, together with some small miscellaneous receipts. In the case of three colleges the figures for 1907–8 are not available, and particulars for 1906–7 have therefore been substituted. The Upper Norwood (Blind) Training College has been excluded from the return. Bangor Normal Training College has also been omitted, as this College was transferred to a Joint Committee of the Carnarvonshire and Anglesey Local Education Authorities in April, 1908. The amount of Government grant paid to residential colleges in the year 1907–8 was larger than usual, owing to a change in the regulations, by which a greater proportion of the grant earned was paid within the year.

SIR PHILIP MAGNUS asked the President of the Board of Education (on April 7) whether he could state how many secondary schools for boys and for girls, respectively, had qualified for the higher grant by conforming to the regulation as to 25 per cent. of free places; of such boys' schools, in how many Latin was an obligatory subject of instruction; and in how many handicraft teaching and laboratory work were essential parts of the curriculum.

Mr. Runciman: The number of secondary schools which have qualified during the year ending July 31, 1908, for the higher grant by conforming to the regulation as to free places, the number of those schools in which boys are taught, and the number of schools for boys in which Latin or handicraft form a regular part of the curriculum are shown in the following table:—

	Number of Schools.	Schools in which Latin is taught.	Schools in which Handicraft is taught.	
			Throughout the School.	To the Lower Forms only.
Boys only	305	261	226	38
Boys and Girls	166	114	131	16
Girls only	186	—	—	—

Latin is not in all these schools a compulsory subject for every pupil. The regulations of the Board require that the curriculum of all secondary schools shall provide for science, and that the instruction in science must include practical work by the pupils.

THE Report of the Board of Education for the year 1907–8 (Cd. 4566), referring to the further education required by those who have already taken as full advantage of the facilities afforded in elementary or secondary schools as their circumstances permit, states that the position is one of promise; the record of performance in all sections of the work is improving steadily; there is a fairly widespread recognition of existing shortcomings, and much serious effort is being made to overcome the difficulties inherent in the case. The machinery for the education of those who can give their whole time to study, including technical study, until they reach manhood, is already in existence. In particular centres and in relation to particular occupations there is a sufficient supply of adequately prepared students to enable the teaching institutions to develop their power to the full; others still suffer from the inadequacy of this supply and from the difficulty of retaining their students long enough to complete the allotted courses. In each type of school improvement is observable in several directions: students are coming up better prepared and with several years in hand for study; technical colleges are adjusting their teaching more directly to the requirements of the related occupations; and employers are finding it of advantage to secure the services of young men who have had the technical training the colleges afford. There is, the Report maintains, sufficient evidence that the teaching institutions are capable of raising the standard of their work when they have the opportunity. Attention is directed also to some aspects of evening school organization. It is a plain duty at the present time, says the report, to increase the number of trained teachers available for work in evening schools who are capable of bringing their teaching to bear directly upon some of the courses of instruction required in these schools in their areas.

THE Treasury have appointed a Committee to consider the statement of claims to additional State assistance, and estimates of the amounts needed for the respective services, which have been supplied by the Scottish Universities at the request of His Majesty's Government, and to report as to what assistance, if any, should be granted from public funds in the interests of the proper development of the work of the Universities, due regard being had to the co-ordination of their work with that of other institutions in Scotland giving instruction of a University standard. The Committee is composed of the following members:—The Right Hon. the Earl of Elgin and Kincardine, K.G. (Chairman), Miss Haldane, Sir Kenelm Digby, G.C.B., K.C.; Principal Sir Harry Reichel, LL.D.; Mr. Charles Mackinnon Douglas; Prof. Andrew Russell Forsyth, Sc.D., F.R.S.; and Prof. G. Sims Woodhead, M.D. Mr. Hubert Warre Cornish will act as Secretary to the Committee. Communications may be addressed to him at Treasury Chambers, Whitehall.

AT a meeting of the West Yorkshire Branch of the Association of Teachers in Technical Institutions at Huddersfield Dr. R. Pohl, late lecturer at the Bradford Technical College, read a paper on "The Defects of English Technical Education and the Remedy." He said that there was not a student of national economy who failed to realize that Germany and the United States, now serious rivals to English trade, owed their rapid industrial and commercial development largely to the magnificent system of technical education which they had established. Technical education was only in its infancy. Almost invariably when that fact was recognized and pointed out the conclusion was drawn from it that the people of England must be prepared to spend more money in erecting and thoroughly equipping technical colleges and Universities. The main object of his paper was to prove the fallacy of that conclusion. It was not lack of money which was to blame. England spends about twice as much money as Prussia, reckoned per head of population, with educational results which would not bear any comparison. What was wrong was the fundamental principle on which rested the whole structure of technical training in this country. The most essential condition for efficiency and economy was that technical education should be established on the basis of systematic national organization, and that it should be nationally managed. The number of day students in all institutions was far too small. Even in the largest colleges, in such institutions as the Birmingham University and the Manchester Municipal School of Technology, the attendance of day students bore no proportion to the cost of their beautiful equipments. This and other defects could be removed by placing technical education on a national basis. He ventured to think that technical education could be far more easily organized on such a basis than, for instance, primary education. The pressure which the Board of Education by means of the grant alone could bring to bear on the governing bodies would prove sufficient to bring the majority, if not all, of the existing schools into line with a national scheme, and to make them take up the position assigned to them in it. He should not recommend an imitation of any existing foreign system; not only because he was unaware of any system that could not be materially improved upon, but chiefly because the educational system of any country must, of course, be adapted to its particular industrial and educational

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conditions. And again, far from condemning the present English system root and branch, he considered that some of its features were most excellent, and should be maintained and further developed. Unless English primary education was put into a much more satisfactory condition, technical education must remain severely handicapped. Did it not almost amount to a national crime that many thousands of children were permitted to leave school when only twelve years of age and when the instruction was just becoming most valuable?

The report of the Committee of the Mocatta Library and Museum states that the most important gift to the museum during the year was a collection of articles from the temple and town of Onias, which was presented by the British School of Archæology in Egypt, through Prof. Petrie. Sir Isidore Spielmann has made a gift of a complete set of photographs of the documents in the Public Record Office relating to the re-admission of the Jews to England. The Committee appeal to those in possession of books or articles of antiquarian value which they think would be of interest to students of Jewish antiquities to offer them to the museum.

The Council of the Royal Asiatic Society at its last meeting accepted the recommendations of a Committee, of which Sir Arthur Wollaston was Chairman, as to the allocation of the Public Schools Medal annually awarded for the best prize essay on a selected Indian historical subject sent in by the competing public schools. A condition of participation is the inclusion of Indian history in the school curriculum. The subject of the last competition was "Lord Wellesley," and the prize essays sent in —one from each school—came from Rugby, Harrow, Eton, Merchant Taylors', Westminster, Glenalmond, and Perse (Cambridge). For the second time since the institution of the medal in 1902 the award went to Eton, whose representative this year is Mr. A. H. M. Wedderburn. Lord Curzon has consented to present the medal at the rooms of the Society on Friday, May 21, at 4 p.m.

A meeting of representatives of the Leeds Education Authority and the accredited representatives of the teachers has arrived at an amicable settlement. Under the terms agreed the operation of the new scale of salaries will be limited to future appointments and the existing scale will be maintained for all present teachers. The annual increments will be awarded as usual, but the resolution of the Council, passed some time since, which provides that all increments are to date as from March 31 in each year, will be observed. The benefits of the settlement extend to secondary teachers in the service of the city authority.

The Report of the United States Commissioner for Education for the year ended on June 30, 1907, in two volumes, which together run to 1,214 pages, deals exhaustively with every branch of American education, and includes also valuable reviews of educational progress in many European and other countries. The carefully arranged and remarkably complete tabulated statistics of the 606 Universities, colleges, and technological schools of the United States, contained in the second volume, show what valuable assistance our own Board of Education could render students and administrators of education if it would provide similar conspectuses concerning British institutions of higher learning. The total value of all gifts and bequests reported by the 606 institutions as having been received during the year amounted to £4,574,000. Of this amount about £1,540,000 was given for buildings and improvements, and £2,540,000 for endowment. The remaining amount was for current expenses. Forty-two institutions each received £20,000 or more. The six institutions which benefited to the largest extent in this way were the University of Chicago, which received some £1,189,000; the Rensselaer Polytechnic Institute of New York, £15,400; Yale University, £198,000; Cornell University, £56,000; Princeton University, New Jersey, £153,000; and Harvard University, £139,000. Of the 606 institutions, 150 are for men only, and 330 are open to both men and women. The teaching force aggregated 24,679—an increase of 729 teachers of different grades over the preceding year. The total enrolment of students was 293,343. Leaving out colleges for women only, and dealing with the remaining 480 institutions, tables are provided in the report which show that in the session 1906–7 £3,399,000 was received in students' fees. The grand total of the receipts of these 480 colleges from every source was £13,616,000.

Much regret will be felt for the death of the Rev. Dr. Rigg. Born in 1821, he was twice President of the Wesleyan Conference, an original member of the London School Board, 1870–76, a member of the Royal Commission on Education, 1886–88, and Principal of the Westminster Training College for Day School Teachers, 1868–1903. For fifteen years he was Editor of the *London Quarterly Review*, and he was a voluminous writer.

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Oxford. As at the time of writing term has only just commenced there are no important movements to chronicle: if there are any hatching they certainly have not yet—if we may judge from the silence of the *Gazette*—broken the shell. After all, we had a busy time last term with the two propositions which were *non-placeted*—the reform of Congregation and the qualifications for the M.A. degree—and possibly we may be allowed a little breathing time. There were those who foretold that before this time we should have once again before us those two burning questions, the Women's Degree, and Necessary Greek, and perhaps we may have one of them this year. At present, however, there seems rather a lack of reformers—or firebrands. But, whatever strength the conservative party may possess, one can hardly doubt that a time will come when it will be possible to obtain an Oxford degree by examination—not, indeed, an Arts degree—without the knowledge of Greek and conceivably without the knowledge of Latin. But for the retention of one of the two great dead languages most of us would die in the last ditch.

Ruskin Hall has hitherto played such a comparatively unimportant part in the University—except, perhaps, in the estimation of those who believe in it—that the recent disturbances have attracted from the daily papers rather a disproportionate attention: the whole affair partakes more of the nature of comedy than tragedy.

There used to be a saying that professors played golf in the morning (the only time indeed when golf is possible in term time) and postponed lectures in the afternoon, but the first *Gazette* of the term, with its pages and pages of announcements of discourses on all conceivable subjects by professors and readers, seems to refute the saying, and there is no doubt now that more men do go to the professors and that the college lecturer is not nearly so hard worked as he was twenty years ago. Theology and law professors have always played an important part, but there has been a noticeable increase in the professorial discourses on scientific and historical subjects, and the students in the medical school are especially well looked after. But an even more striking sign of the times is to be found in the lectures on modern languages. In German we have now, beside Prof. Fiedler, two Taylorian lecturers. There are three in French and a fourth on Old French and Romance Philology, and special courses in Italian and Spanish, and really it has been a case of the demand creating the supply. Of other lectures announced one is sure to attract a large gathering—Mr. Mackail on Swinburne.

Though Oxford movements may have temporarily rested, the athletic undergraduate has achieved a series of triumphs, and it must be a good many years since Oxford so nearly swept the board: of course, the confounding of the critics over the Boat Race was the greatest triumph of all, and Magdalen College, both in the crew and the coach (Harcourt Gold), had a great share in the triumph. It was unfortunate that, after the Lacrosse team had made such a commotion about the half blue, they should, despite being the favourites, have been one of the unsuccessful teams against Cambridge.

London. Convocation passed unanimously the following resolution (March 26): "That the Standing Committee be constituted the Committee to represent the views and guard the interests of Convocation generally in all matters connected with the recently appointed Royal Commission and any scheme which may be submitted to it, and that for this purpose they be empowered to confer and take joint action with the Senate and to act otherwise as may seem expedient, to appoint sub-committees with the same powers, and to add other members to their number; and that the Standing Committee be requested to report to Convocation from time to time." It was further agreed "that it be an instruction to the

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Committee to expedite by all means within its power the proceedings of the Commission, so as to limit the interruption of the work of the University, and to do its utmost to maintain the present general and dual character of the University, while providing for its development on the lines of the request of the Senate for the appointment of the Commission."

Wales.

THE report of the Departmental Committee appointed to inquire into the University of Wales and the work of the University Colleges in Wales has been issued. It says that the members are satisfied that graduates of the University are holding their own in competition for appointments of a scientific or educational nature with the graduates of other Universities. They suggest that the sum expended on the three colleges upon undergraduate scholarships from general income, amounting to nearly £2,000, might, with advantage, be added to the amount now available for the improvement of the colleges as University institutions. As to the lines on which any development of work should proceed, the report says teaching should be left as at present to the colleges, the University continuing to bring the colleges into co-operation in all such matters as are of common interest. The Committee state that the history of the colleges gives them a strong claim to the assurance that the assistance hitherto given will not be withdrawn or curtailed. The Committee suggest that the question of a quinquennial review of the work of the colleges should be referred to a Committee constituted somewhat in the same manner as the Committee which advises on the distribution of the grant to University colleges in England.

Edinburgh.

THE Committee appointed for the purpose of inaugurating a scheme for the improvement and expansion of the University report that the total amount of subscriptions intimated was £47,970. With a portion of the money so subscribed the University has been able to purchase the site of the old Royal Infirmary at a cost of £15,000, and the adaptation of certain buildings thereon to museums, classrooms, laboratories, and other workrooms for the departments of physics and engineering has been met in most part by grants from the Carnegie Trustees. From Sir Donald Currie's munificent gift a capital sum of £20,000 has been set aside as a fund for the endowment of lectureships in various branches of University education. A special memorial fund has been contributed by Sir John Jackson, in memory of the late Prof. Tait, for promotion of research in the physical laboratory.

Glasgow.

AT a recent meeting of the General Council a report was received from a Committee which dealt with the proposal to give a trial to a system of instituting lecturers having a status similar to that of the *Privatdozenten* in the German Universities. Dr. Kerr moved that distinguished graduates who make application to the University Court to teach classes in the University qualifying for graduation should, when the University Court is satisfied of their ability and fitness, be appointed lecturers in the University, and should be granted classroom accommodation in so far as that is possible. It was intended that the University should not pay these new lecturers, but give them house room and allow them to live on the fees they obtained. The motion was duly seconded, and after some discussion it was agreed that the resolution should be sent to the University Court for approval.

St. Andrews.

A SIGNIFICANT fact in connexion with the graduation ceremony on March 31 was the number of women students who received the degree of Master of Arts—out of 50 graduates 38 were women. In connexion with this matter, at a meeting of the general Council of the University held on April 1, a communication was received from the Students' Representative Council regarding the relative number of men and women students. It was pointed out that, whereas the number of women students was rapidly increasing in the four Universities of Scotland, and without as yet any indication of slackening in the rate, the number of men students, while also growing, was growing very slowly. This great increase in the number of women students was confined almost entirely to the Arts Faculties in the Universities, in which they now formed 46 per cent. of the total number of students. These facts had peculiar significance to St. Andrews University, not only because its strength was in its Arts Faculty, but also because the proportion of women students in that faculty was much higher than in the Arts Faculties of any of the other three Universities, forming 61 per cent. of the whole. The report proceeded to point out that this extremely high percentage of women was a possible source of danger in the near future to St. Andrews University, and it was therefore advisable to avoid that danger by keeping the percentage of men students as far as possible above that of women. The report recommended that St. Andrews University might, as a corrective, turn its attention to the development of its science and medical schools, and also encourage the department of military subjects.

Hong-Kong.

THE University which is to be founded at Hong-Kong (says the *Empire Review*) is to be on more practical and advanced lines than the older Universities in the East. Its system of education is to be adapted to the careers which its graduates intend following. In making an appeal for funds the Governor remarked: "We have seen in India and elsewhere the harm which is done by a system of higher education, not based on such principles, which has, in fact, produced a class of young men of high intellectual attainments, but without a corresponding development of character, men for whom there are no adequate careers in life. The same thing has happened in Africa. The graduates from the University of Hong-Kong will have all the opportunities which the Empire of China offers in the ranks of official life and in the fields of commerce and the profession of medicine, engineering, and other occupations, as well as the opportunities offered by the colonies. The model of the new University should approximate to Birmingham or Leeds rather than to that of Oxford or Cambridge or Calcutta."

THE EDUCATIONAL LADDER.

CAMBRIDGE UNIVERSITY.—Bell Scholars: W. H. Carter, Scholar of St. John's; J. M. Creed, Scholar of Gonville and Caius; and Gordon H. Luce, Scholar of Emmanuel (equal). Distinguished in the examination: William St. John Pym, Trinity; and William H. C. Romanis, Minor Scholar of Trinity.

St. John's.—Exhibitions for Cambridge Senior Local Examinations: Thomas T. Scott, Wolverhampton Grammar School, for Classics; W. E. Douglas, Wellingborough Grammar School, for Mathematics.

EDINBURGH UNIVERSITY.—Hamilton Philosophical Fellowship (£93 a year for 3 years): Thomas Anderson, M.A. Mackenzie Classical Scholarship (£111 a year for 4 years): Roderick M'Kenzie, M.A. Sir David Baxter Mathematical Scholarship (£66 a year for 4 years): Herbert Bell, M.A., B.Sc. Drummond Mathematical Scholarship (£101 a year for 3 years): A. B. Grieve, M.A. Vans Dunlop Scholarship in English (£100 a year for 3 years): Gordon Hislop, M.A. Vans Dunlop Scholarship in Logic and Metaphysics (£100 a year for 3 years): Robert Ross, M.A. Lapsed Vans Dunlop Scholarship in Moral Philosophy: D. M. Baillie, M.A. Vans Dunlop Scholarship in Classics (£100 a year for 3 years): Margaret K. Tennant, M.A.

FELSTED.—The following scholarships have been awarded: £70, C. H. S. Haygarth (Mr. Newcombe, Wootton Court, Canterbury); £50, R. B. Beevor (Mr. Pridden, Rosslyn House, Felixstowe), H. W. Duffield (Messrs. Ransome and Jeston, Bay School, Birchington), and E. W. C. Wace (Mr. Middlemist, Allhallows School, Honiton); £40, G. Hetherington (in the school); £30, J. C. Donaldson (Mr. Crawley, St. Stephen's Green, Dublin), G. S. King (in the school), D. J. Longden (in the school); £20, R. L. Bicknell (Junior House, Felsted School).

OAKHAM.—Scholarships: £40, H. Finlinson (Mr. Chapman, Fritham House, Lyndhurst); £25, J. Metcalfe (Mr. Gowring, St. Bede's School, Eastbourne); £25, M. A. Neilson (Mr. Raven, Uppingham and Oakham School).

OXFORD UNIVERSITY.—Radcliffe Travelling Scholarship: Martin W. Flack, B.M., M.A., Keble. Radcliffe Prize: A. F. Hertz, D.M., Magdalen. Worthy of the Prize: A. G. Gibson, D.M., Christ Church; A. C. Inman, M.A., B.M., Wadham. Lothian Prize: F. H. Lyon, late Exhibitioner, Magdalen. Honourably mentioned: Gabriel S. Woods, B.A., Exeter. Arnold Prize: John C. Walton, B.A., formerly Scholar of Brasenose.

Exeter.—Stapledon Scholarship for Chemistry: William C. Rhymes, King's College School.

Magdalen.—Classical Demyships: Stephen A. Wadsworth, Tonbridge: Howard J. B. Clough, Rugby; Eric E. F. Pretty, Harrow; Leonard W. Mynes, Bishop's Stortford College; and Edward I. Powell, Eton. Classical Exhibitions: Henry G. Paterson, Winchester, and William L. Vince, King Edward's School, Birmingham. Exhibition in History: Albert V. Murray, Morpeth Grammar School.

OXFORD: LADY MARGARET HALL.—Scholarship of £40 a year for 3 years: Gwendolen Watkinson, Glasgow High School and Liverpool High School (English Literature). Jephson Scholarship of £45 a year:

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Clementina M. E. Benthall, Sandecotes School, Parkstone (Latin and French). Scholarship of £35 a year: Violet A. Hyett, Mortimer House School, Clifton (English Literature). Commended: Gladys Maltby, Bedford High School (French and German).

OXFORD: ST. HUGH'S HALL.—Ottley Scholarship of £40 a year for 3 years: Dorothy Selby, Worcester High School (Mathematics). Scholarship of £25 a year for 3 years: Hilda Stansfield, Manchester High School and Liverpool College (Modern History).

ROSSALL.—Promoted from Junior Scholarships to Senior Scholarships: Y. L. Ellis, R. A. Beloe, C. M. Reece, R. W. Paul, R. V. Menzies, and F. Brundrett (Mathematics). Elected to Junior Scholarships: for Classics, E. K. Allin (Mr. A. P. Cary Field, West House School, Edgbaston); J. W. Blake (Mr. A. S. Athawes, Dumpton House, Broadstairs); P. H. L. Brough (Messrs Knowles and Danglish, Cothill House, Abingdon); H. F. G. Bromley (Mr. R. M. Hugh-Jones, Colet House, Rhyl); V. P. Davies (Mr. G. E. Rudd, Stoneygate School, Leicester); and A. L. Trundle (Mr. E. A. Cooper, Orleton, Scarborough). For Mathematics: A. G. Blake (Mr. A. S. Athawes, Dumpton House, Broadstairs); H. Hall (Mr. A. E. Buckhurst, the County School, Richmond); N. Kemp (Rossall School); and C. D. Storrs (Mr. H. T. S. Storrs, Shirley House School, Old Charlton).

SHREWSBURY.—Elected to Entrance Scholarships: £70, F. J. Kinchin Smith (Mr. E. W. M. Lloyd, Hartford House, Winchfield); £40, B. H. Ellis (Mr. W. R. Mills, Highfield, Liphook), and H. B. Stones (Mr. P. S. Dealtry, The Leas, Hoylake); £30, D. D. La Touche (Mr. W. L. Scott, Baymount School, Dollymount, Dublin).

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on April 17. Present: Prof. Adams, Vice-President, in the chair; Mr. Barlet, Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. J. L. Butler, Miss Crookshank, Mr. Eve, Mr. Hawe, Rev. R. Lee, Mr. Morgan, Mr. Pinches, Rev. Dr. Scott, Mr. Starbuck, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

The Secretary reported the arrangements that had been made for holding the examinations of the Newfoundland Council of Higher Education to take place in June next. The number of entries showed an increase of about five hundred on the corresponding examinations last year.

The Diploma of Licentiate was granted to Mr. R. P. Kulandaiswami, and that of Associate to Mr. J. S. Bower and Mr. G. W. Dominey, who had satisfied the prescribed conditions.

One of the representatives of the College on the Federal Council reported that Dr. Gow's Committee, which included the members of the Federal Council, had come to the conclusion that there was no present prospect of securing the constitution of a Teachers' Registration Council, and that attention should be directed to the consideration of the conditions which should govern admission to a Register. The Committee had agreed that it would be desirable to arrange for a conference of representatives of bodies interested in registration in order to discuss this matter, and it had been decided to entrust the drawing up of the agenda for the conference to a sub-committee of three persons, representing respectively secondary, elementary, and technical education.

The following persons were elected members of the College:—

Mr. W. L. Brooksbank, A.C.P., 2 Lancaster Villas, East Finchley, N.
Mr. J. H. Brown, B.Sc. Lond., L.C.P., 67 Legsby Avenue, Grimsby.
Mr. J. H. Ferraro, A.C.P., Bella Vista, St. Budeaux, Devonport.
Miss S. Greves, B.Sc. Lond., L.C.P., 19 Guernsey Grove, Herne Hill, S.E.
Mr. W. J. T. Pascoe, A.C.P., Anerley College, Anerley, S.E.

The following books had been presented to the Library since the last meeting of the Council:—

By the CAMBRIDGE UNIVERSITY PRESS.—Payen-Payne's Balzac's Le Médicin de Campagne.
By METHUEN & CO.—Foat's London Reader; Fursdon's French and English Parallels; Perry's Die Geschichte von Peter Schlemihl.
By J. MURRAY.—Proceedings of the Classical Association, 1908; Hartog's Mérimée's La Vénus d'Ille et la Dame de Pique; Poole and Becker's Commercial French Reader.
By the OXFORD UNIVERSITY PRESS.—Delp's Balzac's Cesar Birotteau; Payne and Beazley's Hakluyt's Voyages of Drake and Gilbert; Smith's Book of Verse for Boys and Girls, Part III., Sections 1 and 2; Wahl's Hugo's Préface de "Cromwell"; Wilson-Green's Sismondi's Pavie et le Sac de Rome.
By RELFE BROS.—Perry's Intermediate History of England.
By RIVINGTONS.—Somerville's Grammaire Française Elementaire.
Calendar of University College, Reading.
Joint Scholarships Board Year Book.

CONFÉRENCES FRANÇAISES.

SOCIÉTÉ NATIONALE DES PROFESSEURS DE FRANÇAIS.

DU PROGRES DU MOUVEMENT FÉMINISTE EN ANGLETERRE.

Par Mme C. BAGNALL.

LE 27 mars dernier il y avait foule dans la grande salle du Collège. Mme Bagnall, directrice de l'enseignement du français à la "High School for Girls" de Clapham, avait choisi un sujet de brûlante actualité, que rehaussait la haute place qu'elle occupe dans le monde enseignant, aussi bien que l'autorité de son expérience, et qu'elle a traité avec tout le tact et tout le talent auxquels on pouvait s'attendre d'elle. Forme littéraire, saine philosophie, argumentation serrée avec documents à l'appui, rien n'y manquait. Ajoutons à cela une forte personnalité, une voix sympathique, une excellente diction, l'art de faire valoir la phrase, le sentiment profond de l'orthodoxie de sa thèse, et nul ne sera surpris qu'elle ait porté la conviction dans les cœurs, et gagné son auditoire à sa cause.

Aux temps anciens, nous dit la conférencière, les fourmis, faibles encore, vivaient, humbles et soumises, sous la tutelle des lions, qui en faisaient lors à leur guise. Grâce à cette protection, celles-là devinrent si nombreuses et si puissantes que, confiantes dans leur bon droit, et lasses du rôle effacé qu'on leur faisait jouer, et dont elles souffraient, elles exprimèrent un jour le désir d'avoir leur petite part dans le gouvernement de la république. Ces messieurs n'en tinrent aucun compte. Mais les revendications se firent plus pressantes, et, devant un refus obstiné, les fourmis résolurent de s'imposer. Elles attaquèrent les lions qui, harassés de pétitions, harcelés de piqûres, impuissants contre le nombre, ne surent bientôt plus à quel saint se vouer, et implorèrent un moment de répit. L'affaire en est là, *sub judice*.

Tel semble être, *in parvo*, l'historique du mouvement féministe.

Certes, depuis nombre d'années, la femme n'est plus ce qu'elle était, une pure créature d'ornement ou d'utilité domestique. L'éducation, surtout l'enseignement supérieur, en a fait un tout autre être, sous beaucoup de rapports l'égal de l'homme. Comme ouvrière dans les ateliers, comme employée dans les grandes administrations, elle le remplace avec avantage. Toutes les professions libérales lui sont ouvertes, et elle sait y tenir un rang honorable. Tout comme les hommes, elle sort des universités Maitre-ès-Arts ou ès-Sciences. Ce qui ne l'empêche pas d'être, à l'occasion, épouse dévouée, excellente ménagère et mère de famille.

Mais, dans quelque position qu'elle se trouve, son infériorité économique est notoire, et c'est là ce contre quoi elle s'insurge. Son travail manuel ou intellectuel, équivalent en tout point à celui de l'homme, n'a pas la même valeur marchande. De quelque côté que l'on regarde, dans les ateliers, dans les écoles, dans les administrations, le salaire de la femme est coté à près de cinquante pour cent au-dessous de celui de l'homme. Il y a donc là une injustice criante qui n'a plus sa raison d'être dans l'incapacité de la femme. Et il semblerait que, pour relever sa position économique, il n'y eût de moyen plus efficace que de lui octroyer le vote parlementaire. Le suffrage ne sera point en ses mains une arme dont elle abusera, mais un levier dont elle usera en toute sagesse pour améliorer une position subordonnée qui la rend par trop dépendante de l'homme. Dans cette revendication de ce qu'elle considère son droit, la femme n'est point mue par un sentiment d'ambition mais par un sentiment de pure justice. Et puisque la représentation indirecte ne suffit plus pour parvenir à un résultat équitable, elle réclame, comme facteur important dans l'économie sociale de la nation, le libre exercice de son droit de citoyen, le droit de vote.

Faire un compte rendu détaillé de cette remarquable conférence qui a été d'un bout à l'autre intéressante et instructive, nous entraînerait trop loin. Il nous suffira d'ajouter que Madame Bagnall ne s'est pas contentée de nous donner tous les arguments en faveur de sa thèse, mais qu'elle a sobrement, sans parti pris, discuté le pour et le contre, pour en arriver à la conclusion que le vote pour la femme est devenu impératif.

Nous nous attendions à une longue discussion, à une véritable passe d'armes. Point. La discussion a été presque nulle. Un monsieur a bien fait ressortir qu'en entrant dans la politique, en singeant l'homme, la femme perdrait beaucoup de cette | presti-

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gieuse puissance, de cette grâce, de cette poésie qui en font tout le charme et qui sont son véritable apanage, les plus beaux fleurons de sa couronne . . . L'auditoire était gagné, et a montré toute son appréciation par de chaleureux applaudissements.

THE N.U.T. ANNUAL CONFERENCE.

The fortieth Annual Conference of the National Union of Teachers was held at Morecambe on April 8–12, under the presidency of Mr. C. W. Hole, of the Church Street Council School, Stoke Newington, London. The Union now numbers fifty-six County Associations, five hundred Local Associations, and 64,459 members; and, in addition to over eighteen hundred delegates from the various branches of the Union, representatives of teachers' associations in Belgium, France, Germany, Holland, Switzerland, Ireland, and Scotland, the Teachers' Guild of Great Britain and Ireland, and the Co-operative Union, as well as distinguished representatives of local bodies, were also present.

The Civic Solution.

After a careful and dispassionate review of the recent difficulties over the Education Bill, and of the existing situation, the President said: The only possible solution, since all others appear to fail, is that sacrifices are bound to be made all round, and the State must disendow all sectarian and religious teaching and concern itself only with the provision of secular education. Doubtless England has not yet agreed that the State has no function either to teach religion or to have religion taught in its name; but that there is a tendency in that direction is apparent when a stanch Catholic like Mr. T. P. O'Connor, M.P., says: "The secular solution had one great thing to be said in its favour; he would not say it was logical, because that apparently was rather a term of opprobrium to apply to any proposal in the House. He said it was good, because it was consistent, and it was fair all round. It established no form of religious teaching of one communion over another, it excluded with equal justice and with absolute equality every form whatever of religious instruction; and if Protestants were willing to accept exclusion, Catholics could make no particular complaint: they got no worse treatment than any other body."

That all past attempts at compromise have failed does not augur well for future endeavours, since, unhappily, so many decry the simple Bible teaching as unsatisfactory; but the civic solution, sweeping aside the entire subject over which there has been conflict, would clear the ground for a national system of schools with full local control, no "contracting out," and no creed tests. Therefore, speaking for myself, and not claiming that a single member of this Conference is in accord with me, I must say that I have been driven to the conclusion that in this solution lies the largest measure of practical justice and equity that can be meted out to contending claims; provided always that, where denominations have furnished the funds for building their schools, the public must pay a fair rent for the occupation of the premises and keep them in a satisfactory state of sanitation and repair.

Neglect of Pressing Problems.

Perhaps the greatest evil arising out of this controversy is the neglect of real educational problems needing instant attention. Mr. Runciman regrets this. He says: "The attention of the public is diverted from the real educational needs of the country; administrators' time and attention are wasted; and half the time of the capable heads of the department is taken up with matters that arise out of the religious question." The Board of Education has happily seized the opportunity offered by the temporary cessation of strife over Education Bills to consider the staffing of public elementary schools and the size of classes, with the result that an admirable circular has been sent out which proves Mr. Runciman to be one of the wisest and ablest of the many brilliant men who have presided over the destinies of the elementary schools of this country.

Staffing of Elementary Schools.

That the changes which will be effected by the Code for 1909 are highly desirable and necessary will be admitted at once, when the present position is fully realized. The character of the teaching staff in the elementary schools of England and Wales, as shown by the latest available return of the Board of Education, is—of certificated teachers, 89,078, or 49 per cent.; of uncertificated teachers, 40,569, or 22 per cent.; of supplementary teachers, 21,984, or 12 per cent.; and of pupil-teachers, 27,227, or 15 per cent. The 22,000 so-called supplementary teachers—possessing scarcely any educational equipment, utterly unfitted in most cases for the important duties they are called upon to perform; their sole passports to the teaching profession being that they must be at least one year over sweet seventeen and have been successfully vaccinated—are answerable for the education of nearly 600,000 children. The Board of Education proposes that, in future, each member of this class of teacher shall count on the staff for twenty instead of thirty children, while other regulations provide for the limitation of the numbers to be employed in the schools, and for the withdrawal by the Board of the recognition of a supplementary teacher at any time, if not efficient. This is, indeed, a step in the right direction, and shows that Mr. Runciman is really solicitous that there should be an improvement in the quality of the teachers at work in the schools.

Student Teachers.

There are also many young persons termed "student teachers," whose academic training is unexceptionable. These enter as teachers immediately after having been pupils themselves in secondary schools, and have, of course, no knowledge of the principles of teaching: they come into the Elementary Schools—which they only attend eight times a week—with the object of learning the technique of their future profession: they need the attention and assistance of qualified teachers to supervise and direct their practice in teaching and class management. They are really apprentices, but the Board of Education has regarded each of these young people, who may never have been in an elementary school before, or done a day's teaching anywhere, and who are away one day out of every five, as an efficient teacher equal to educating forty-five children on every occasion on which the school is opened. It needs no arguments of mine to prove that it is farcical to imagine that these beginners are capable of performing the task allotted to them. It is perfectly right and necessary that at this stage of their career they should enter the schools to discover whether their choice of a profession is a congenial one and whether they have an aptitude for the teacher's life. If they should prove to be unfitted, it is much better that at this period the fact should be ascertained, so that, both in their own interests and those of the children, they may turn their attention to some other walk in life for which they have a greater natural ability.

College-Trained Certificated Teachers Waiting.

Whether fit or unfit for the teaching profession, these learners certainly should not count as qualified teachers: rather their presence on the staff should be counted as a serious addition to the head teacher's duties. Hence I hope that, although by the new proposals the student teacher still counts for twenty children, he, like the pupil teacher, will be withdrawn ere long from the roll of responsible instructors. There are some five hundred well equipped, college-trained certificated teachers waiting to fill the gap which will be caused by the new regulations of the Board of Education, and an additional four thousand will be seeking employment in August. The Circular of the Board of Education is practical, but not heroic; and, although far from being exhaustive, it will work a marvellous change in the mental, moral, and physical fitness of the output from the primary schools, and at the same time an act of justice will be performed in enabling a very large number of college-trained teachers to secure the engagements they have been led to expect. The present position of these unemployed teachers is, indeed, a grievous one. From a statement made by the President of the Training College Association in December last, it appears that, out of 3,764 students who left in July, 851 failed to secure appointments. Of those employed we are informed, by the Principal of Hockerill College, "that many had been compelled to become waitresses at City restaurants and to take odd jobs at stores and drapery establishments"; while Mr. Gautrey, a member of the London County Council, stated, on March 9, "that, of 176 students leaving one of the London colleges last year, 74 are still without a permanent post: one of these had accepted a temporary clerkship in the Board of Trade Offices, and one or two others had become clerks or cashiers at refreshment houses in the City."

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THE FINANCIAL ASPECT.

Each of these teachers in the course of training has cost the nation a sum of at least £200, so that if these 500 teachers, who are out of employment, turn to other forms of occupation in order to gain a livelihood, £100,000 will have been wasted. The proposals of the Board of Education must take immediate effect unless these teachers are to be lost to the State. For this a much more generous grant should be forthcoming from Imperial sources, owing to the heavy burden of the Education rates in many parts of England and Wales, especially when it is remembered that the clause in the Circular which limits the number for a certificated teacher to sixty on the roll undoubtedly will have the effect of reducing the average attendance, and, therefore, the Government grant. One cannot but sympathize with the Local Education Authorities over the financial strain put upon them by the Board of Education, which, while it makes fresh demands year by year, yet fails to pay a proper share of the increasing cost. Money amounting to a million and a half was promised if Mr. Runciman's Bill had passed; but when a portion of it was asked for for educational purposes, he spoke of the request as a "raid upon the Exchequer," and the Education Estimates of last March extinguished hopes by reducing the grants to elementary schools to the extent of £68,000. I sincerely hope that shortly he will view the question more sympathetically: for it is to be remembered that the provision of meals, medical inspection of children, and the reduction of staff values, all mean additional cost, and that the Local Authorities have had the whole of this expense thrust upon them; it appears only just that Mr. Runciman should persuade the Treasury to come to their relief by a largely increased grant from the national funds; otherwise the strain upon the Local Authorities will become intolerable and reaction will set in. This of necessity must be detrimental to the true interests of the children he evidently desires to benefit.

The National Union does not wish to create a dearth of teachers. Its ideal is a qualified teacher for every class, and it will gladly see the requisite number trained and engaged; but it is bound to draw the attention of parents and guardians to the fact that the outlook is still gloomy.

WOMEN AS TEACHERS.

NOWHERE (says the *Westminster Gazette*) is the different standard of pay more marked than in the teaching profession, for here, by general admission, women are as a rule more efficient than men. Even in the elementary schools in rough districts it is admitted that women teachers are often more effective in maintaining discipline than the men, as well as teaching better on the whole. Yet there is a wide difference in the standard of pay. That is sometimes justified on the ground that it is assumed that the man will marry and have a wife and children to support. Yet there are many cases in which the women teachers are actually widows with children to maintain, while by no means all the male teachers marry, and in many instances where they do they join their fortunes with a woman teacher, who continues to contribute her full earnings to the joint household.

Yet, with all the injustice of the lower salary, there is no profession that offers to the young woman of capacity so wide a field or one in which the average of remuneration is so good. Teaching in the elementary schools is becoming almost the preserve of women. The pay is good on the whole, the holidays are long and regular, and there is usually some provision for the years when active work is over. Nor are the qualifications demanded of an altogether exceptional kind. Other than educational qualifications are wanted, however. The successful teacher must possess a sound physique; she must have the full sympathy with children which enables her to enter into all their ideas and conversation; there must be the capacity for gaining the confidence and love of the children with the power of maintaining discipline. Moreover, an absolutely essential qualification is that of clear and lucid exposition, born of simplicity of thought, and added to great patience.

There are at present over a hundred thousand women teachers in elementary schools, and more than twenty thousand female pupil-teachers in training. Those figures are in themselves indicative of the extent to which it has been realized that teaching is almost the ideal profession for women.

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CURRENT EVENTS.

Fixtures.

At the meeting of members of the College of Preceptors on Wednesday, May 26, Prof. J. Adams will read a paper on "The Dangers of Illustration in Class Teaching."

* * *

M. A. Canivet will address the Société Nationale des Professeurs de Français en Angleterre at the College of Preceptors on May 29, at 4 p.m. Subject: "Mme. Tallien."

* * *

The Incorporated Association of Assistant Masters in Secondary Schools will hold a meeting of Council and a General Meeting of members at the Leys School, Cambridge, on May 29. Among the subjects a series of resolutions with regard to the Teachers' Register, the formation of the new Registration Council, and the Regulations for Secondary Schools will be submitted.

* * *

Mr. Cecil J. Sharp will address the London Schools Musical and Dramatic Association on "Folk Song in Education," at St. Bride Institute, Bride Lane, Ludgate Circus, E.C., on May 13, at 7.15 p.m. Illustrations by Miss Kay.

* * *

Miss Fay Davis and Mr. Gerald Lawrence continue their Shakespearean representations at the Court Theatre: May 3, "Twelfth Night"; May 10, "Hamlet"; May 17, "Much Ado about Nothing."

* * *

The St. Andrews Summer School will be held July 19–30 and August 2–13.

Honours.

The University of Edinburgh has conferred the honorary degree of LL.D. upon Dr. William Burnside, M.A., D.Sc., F.R.S., Professor of Mathematics, Royal Naval College, Greenwich (in addition to the list given in our March number, page 123).

* * *

Sheffield University has conferred the honorary degree of D.Litt. upon the Prince of Wales on the occasion of his opening the new Library; and upon Mr. Edgar Allen, donor of the Library.

* * *

McGill University, Montreal, has resolved to confer the honorary degree of LL.D. upon Dr. George A. Gibson, Edinburgh.

* * *

The Right Hon. Sir Horace Curzon Plunkett has been elected to an Honorary Fellowship at University College, Oxford.

Endowments and Benefactions.

"A Prize Fellow" has given £1,000 to the Bodleian Library for the purchase of foreign books. An Honorary Fellow of Balliol has given £100 towards the revision of the Catalogue.

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LADY MARGARET HALL, Oxford, appeals for some £17,000 for additional buildings—£7,000 for dining hall and library block, £7,000 for new students' wing, £3,000 for chapel. Cheques to be made payable to Mrs. Toynbee, Hon. Treasurer, 10 Norham Gardens, Oxford.

* * *

A "JOHN OLIVER HOBBES" Scholarship in English Literature, tenable at University College, London, has been established in memory of the late Mrs. Craigie.

* * *

AN appeal has been issued for funds for the encouragement of research at the University College of South Wales and Monmouthshire.

* * *

SIR FREDERICK WILLS, BART., has left another £5,000 to Bristol University, provided the charter is granted by January 14, 1910.

* * *

THE Assembly's College, Belfast, has received a bequest of over £100 a year for the Library from the late Miss Isabella Brownlee, of Lisburn.

* * *

FIVE gentlemen in New York, acting as a committee to assist in the establishment of a Chair of Scottish History and Literature in Glasgow University, have already received contributions amounting to some £500.

* * *

LORD WINTERSTOKE, Chairman of the Court of Governors of Mill Hill School, and an old Millhillian, has given £9,000 to found three University Scholarships for Mill Hill boys.

* * *

HARVARD UNIVERSITY has received a gift of £30,000 for the endowment of the University chapel.—Yale University has received £10,000 from an unknown donor for establishing a memorial to the late Prof. Ely.—Hamilton College is to receive a bequest of £10,000 from Mrs. Annie P. Burgess, of New York City, who died about three years ago, leaving for educational and charitable purposes upwards of £40,000. This included £2,000 to Columbia University and to Barnard College for scholarships.—Mr. Carnegie has given £4,000 and Mr. J. D. Rockefeller £1,000 to Hamilton College as a memorial fund in honour of the services in the cause of international peace and friendship rendered by Senator Root, recently America's Minister for Foreign Affairs. Mr. Root was educated at Hamilton. Mr. Carnegie's generosity assures another gift of £10,000 which was contingent on a certain sum being collected by July 1.—The late Mrs. Emma Cummings, of East Hampton, L.I., left £5,000 to Dartmouth College and £5,000 to Bowdoin College.—The late Dr. Charles H. Roberts, of Highland, N.J., in his will provided for the founding of five scholarships of £48 a year at Cornell University.—The Legislative Appropriation Bill, carrying £196,400 for the University of Kansas, has passed.—Wellesley College receives the residuary estate of the late Ellen A. Kendall; £12,000 to found a professorship bearing her name, the balance (if any) to be used to aid worthy students.—A friend of McGill University has promised £20,000 as soon as £100,000 is otherwise raised; and another has given the University £5,000 unconditionally.

Scholarships and Prizes.

A COMBINED examination for open scholarships, exhibitions, &c., will be held at Trinity, Clare, Trinity Hall, Peterhouse, and Sidney Sussex, Cambridge, on December 7 and following days. Detailed information regarding the number and value of the scholarships and exhibitions, the schedules of the subjects, the age of candidates, and forms of application for admission to the examination, may be obtained from any of the tutors of Trinity College—namely, Mr. J. D. Duff, Mr. W. M. Fletcher, Mr. W. C. D. Whetham, and the Rev. E. W. Barnes—or from the senior tutor of Clare College, Mr. W. L. Mollison; from the tutor of Trinity Hall, Mr. G. B. Shirres; from the tutor of Peterhouse, Mr. H. J. Edwards; or from the Master of Sidney Sussex College, Mr. C. Smith, to one of whom the form of application (when filled up), together with certificates of birth and of moral character, should be sent.

* * *

THE *London University Gazette* of April 7 contains a complete list of the scholarships and exhibitions connected with the University.

* * *

SOMERVILLE COLLEGE, Oxford, offers a Research Fellowship, £120 a year for three years. Send name, three references, and statement of proposed research to Miss H. Darbishire, Somerville College, Oxford, by May 15.

* * *

LADY MARGARET HALL, Oxford, will offer, in 1910, three scholarships of £50, £40, and £30, tenable for three years.

* * *

ST. HUGH'S HALL, Oxford, will offer, in 1910, three scholarships of £35, £30, and £25, tenable for three years.

* * *

ROYAL HOLLOWAY COLLEGE offers twelve Entrance Scholarships (£50 to £60) and several bursaries (not more than £30), tenable for three years. Examination begins June 28. Apply to the Secretary by May 29.

* * *

THE CITY OF LONDON SCHOOL offers seven entrance scholarships (Classical, Modern, Science) of £15. 15s. each for competition in May. Particulars and forms from the Secretary.

* * *

TONBRIDGE SCHOOL offers for competition, January 8–10, two scholarships of £100 a year, two of £80, two of £40, and not more than six Foundation Scholarships (exemption from tuition fees). Particulars from the Head Master.

* * *

MILL HILL SCHOOL offers entrance scholarships and exhibitions for competition on July 8. Apply at once to the Bursar.

Appointments and Vacancies.

APPLICATIONS for the Chair of Latin in the University of Liverpool should be lodged with the Registrar by May 15. Not less than three references; twelve copies of testimonials, if candidate desires. Not less than £600.

* * *

APPLICATIONS for the Chair of Economics in the University of Sheffield should be lodged with the Registrar by May 12.

* * *

APPLICATIONS for the Chair of French Language and Literature in the University of Birmingham should be lodged with the Secretary by May 8. Not less than three references (sixty-five copies). Testimonials not required. £500.

* * *

APPLICATIONS for the Professorship of History in the University of Birmingham should be lodged with the Secretary by May 8. Not less than three references (sixty-five copies). Testimonials not required. £600.

* * *

APPLICATIONS for the Chair of French in the University of Manchester should be lodged with the Registrar by May 22. £600.

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THE University of Manchester requires an Assistant Lecturer in Botany (including Vegetable Physiology). Particulars from the Registrar.

* * *

PROF. LLOYD TANNER, M.A., D.Sc., F.R.S., has resigned the Chair of Mathematics in Cardiff University College, after twenty-six years' service.

* * *

PROF. MASTERMAN has resigned the Chair of History in the University of Birmingham, which he has held since 1902.

* * *

MR. DENNIS HIRD has resigned the Principalship of Ruskin College, Oxford.

* * *

DR. J. FITZMAURICE KELLY, D.Litt. Col., F.B.A., has been appointed Gilmour Professor of Spanish in Liverpool University.

* * *

PROF. WILLIAM STROUD, M.A. Oxon., D.Sc. Lond., has resigned the Cavendish Chair of Physics in the University of Leeds, after twenty-four years' service.

* * *

THE Strathcona Chair of Zoology in the McGill University, Montreal, is vacant. Apply to the Secretary.

* * *

THE Professorship of English Language and Literature in the Maharaja's College, Mysore, is vacant. Apply to the Inspector-General of Education in Mysore, Bangalore, South India, by June 10.

* * *

MR. THOMAS W. ARNOLD, M.A., Professor of Arabic in University College, London, and Assistant Librarian at the Foreign Office, has been appointed "Educational Adviser to Indian Students."

Prof. Arnold was ten years on the professorial staff of the Mohammedan Anglo-Oriental College at Aligarh, and was afterwards Professor of Philosophy in the Lahore Government College.

* * *

MR. J. F. DODSON, M.A., has been appointed Senior Assistant Lecturer in Classics, and Mr. R. Petrie, B.A. Oxon., Junior Assistant Lecturer in Philosophy, at Manchester University.

* * *

MISS CONSTANTIA ELIZABETH MAXWELL, M.A., has been appointed an Assistant to the Professor of Modern History in Trinity College, Dublin.

Miss Maxwell graduated last Michaelmas with a First Senior Moderatorship and large Gold Medal in History and Political Science. She is the first woman to join the teaching staff of Trinity College.

* * *

MISS L. HARRISON has been appointed Assistant Mistress in the Birmingham University Training College.

* * *

MISS M. E. STOKER, B.A. Lond., has been appointed Head Mistress of Clapham Secondary School.

* * *

MISS S. E. STENHOUSE, B.A. Lond., has been appointed Assistant Lecturer in Education in Clapham Training College.

* * *

MISS C. M. WORSFOLD has been appointed Head Mistress of St. Margaret's School, Polmont, N.B.

* * *

THE Principalship of College Hall (Byng Place) is vacant, through the resignation of Mrs. Viriamu Jones. Applications (with not more than three testimonials and three references, and any other evidence—twenty-four copies), marked "*in re* Principalship," to the Hon. Secretary, Lady Lockyer, 16 Penywern Road, S.W., by May 10.

* * *

MISS E. STRUDWICK, M.A., has been appointed Resident Tutor at Bedford College for Women (University of London).

* * *

THE Head Mastership of Thetford Boys' Grammar School is vacant. £120, £3 capitation fee (maximum), house rent free. Graduate, with secondary-school experience. Apply (with three testimonials) by May 5 to F. V. Houchen, Esq., London Road, Thetford.

* * *

WE learn with regret that the Rev. C. H. T. Wood, M.A., has resigned the Head Mastership of Sherborne School through illness.

* * *

A HEAD MASTER is required (August 1) for the new County School at Ramsgate. Particulars from Fras. W. Crook, Esq., Caxton House, Westminster. Apply by May 10. £300 to begin with.

* * *

MR. C. E. THOMPSON, M.A. Cantab., L. ès. L. Paris, has been appointed French and German Master at St. Marylebone Grammar School.

* * *

DR. JOHN HUTCHISON will retire from the Rectorship of Glasgow High School at the end of the current session. He has been associated with the teaching staff of the school for forty-eight years.

* * *

A CLASSICAL mistress is required for the Girls' Section of the Bede Collegiate School, Sunderland. Not less than £120 to begin with. Apply to the Education Secretary, 15 John Street, Sunderland. Stamped envelope for particulars by May 9.

* * *

AN Assistant Master is required (for September) for Batley (Boys) Grammar School. Application forms (to be returned by May 15) from G. R. H. Danby, M.A. Oxon., Education Offices, Batley.

Literary Items.

MESSRS. A. & C. BLACK announce a "Colour Book on Essex," painted by Mr. Burleigh Bruhl and described by Mr. Hope Moncrieff. Also a volume on "The Inns of Court," illustrated (with twenty water-colour drawings) by Mr. Gordon Home and described by Mr. Cecil Headlam.

* * *

MR. FROWDE announces "Principles and Methods of University Reform; being a Letter addressed to the University of Oxford by Lord Curzon of Kedleston, Chancellor of the University."

* * *

MESSRS. BLACKWOOD announce "The Place of History in Education," by Prof. J. W. Allen, of Bedford College (University of London).

* * *

MR. EDWARD STANFORD announces, for early publication, "A Sketch of Historical Geography," by the late Keith Johnston, F.R.G.S., describing the growth of the world as known to civilized nations from the dawn of history to modern times — a reprint of a section of the author's "Physical, Historical, Political, and Descriptive Geography." It will be prefaced by an appreciation of the author by Sir Clements R. Markham, K.C.B., F.R.S.

* * *

MESSRS. NELSON have begun to issue in serial form a

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strikingly interesting and instructive work, popularly written and lavishly illustrated, on "Engineering Wonders of the World." (See "General Notices—Science.")

* * *

L'Education, "revue internationale illustrée d'éducation familiale et scolaire," edited by M. G. Bertier, Directeur de l'Ecole des Roches, Verneuil, Eure, has just made its début. The first number is varied, attractive, and promising.

General.

"A University of Bull-Fighting," says the Madrid correspondent of the *Daily Express*, "has been established at Bilbao, and will open its doors on July 1. It will grant two degrees—Licentiate and Doctor of Tauromachy. It is hoped that the new University will rescue the national sport from the decadence into which it has fallen recently."

* * *

Old (and Young) Boys of the City of London School will be pleased to see it immortalized in the April number of the *Captain*. The description is ample and the illustrations are numerous and good.

THE RELATIONS BETWEEN HEAD MASTERS AND ASSISTANT MASTERS.

At the Evening Meeting of the members of the College of Preceptors on Wednesday, April 21, Dr. R. Wormell, F.C.P., in the chair, Mr. W. J. Addis, M.A., introduced a discussion on the above subject. He said:—

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Why didn't he come at first? He was lost in reflection, absent-minded, plunged in thought over a serious matter by the side of which his duty of answering the bell or any school duty paled into insignificance. He had heard the night before that his compeer, Caretaker Smith, was able to finish his work at a quarter past six as a rule in the evenings. Now *he* could not finish till twenty past. This discrepancy had given him furiously to think. He had all along scented unfair treatment to himself, and overwork. Now that scent had materialized into definite substance, into a fact. There was no doubt about it. He was overworked. Smith *had* a better time of it. And he was engaged at the moment of your ring in speculating what step he had better take to put right this preposterous state of affairs—either blame the head master, petition the governors directly, or move a resolution at the next meeting of the society for the preservation and prolongation of caretakers' leases and lives.

You ask to see the head master. "Yes, very well, come in, he is busy at this moment. He doesn't see visitors except at notified times, but will no doubt see you in the school interval." You go into his room and wait. Piles of books and papers, graphs and diagrams everywhere about. Grand work, you think, these head masters are doing. Forming character, developing mind, rearing brave and noble citizens. At this very moment he is busy teaching (for you know that he teaches as well, not merely organizes). All sorts of elevating thoughts in connexion with this man's high destiny pass through your stimulated soul. In your thought you pay him the highest possible tribute.

You could wish you were a head master yourself.

Amid these lofty musings you stroll to the window and gaze on the playground. It is all marked out with chalk-lines—curious small squares and circles. These, you afterwards learn, are for organized hop-scotch and other modern developments of play. The school is very good at these; it is the champion school in the district at hunt-the-slipper. The head master would like you to see the team have a game, only unfortunately there is at present a slight lull in this special excellence, as the school slipper has been mislaid, and the requisition system requires that a certain date has to come before the missing treasure can be replaced—if the Committee passes it. It is a great bore. No provision has been made in the regulations for such a misfortune. The head master feels that it is not for him to move.

As your eye roves about, you catch sight of a figure, gowned, and moving actively hither and thither, bobbing up and down, evidently very busy over something. You idly wonder who it may be, and return to your seat.

Presently in bustles the head master. He apologizes for having kept you waiting, and begins to explain how busy he is. "Yes; taking your VI. form, I s'pose," you say. "What lesson was on?" "Oh, no," he replies; "I do usually take the Sixth in Scripture, but just now I have more important matters on hand. My Committee wants a report on the number of railings round my playground, and I have been counting them—that is to say, a part of them. I shall go on with the work later."

He tells you a few more of the occupations on which he had been engaged since the beginning of term. All of the same kind: choosing colours for his "houses," making out averages of attendance for the various boroughs from which his boys come to school, trying to master the difference between bursar, pupil-teacher, and student-teacher, ascertaining which of the pupils might reasonably be provided with free boot-laces, which, after weeks of animated discussion, had at length been pronounced needful for supply by the Education Authority. Not a word, not a thought of mind-developing, character-forming; and, what is worse, the man feels no humiliation or unworthiness in the pursuits of his career. He is interested, cheerful, hopeful, evidently acting up to the highest ideals of his epoch, entirely worthy and as well-meaning, industrious, and vigilant as you could possibly desire.

"Well," you say, slightly disappointed, and perpending this problem, "of course, after all the head master is not a *teacher* in the strict sense; he is a supervisor, organizer, co-ordinator. Perhaps the tendency *is* to become rather trivial in the contemplation of many things, and to lose sight of proportion. If this man, who seems perfectly sound at heart, were given, say, a year's rest from his environment—a year without the mental acrobatics involved in producing artificially calculated returns—a year's absence from lectures, meetings, discussions, where his poor brains are distracted and tempted by a kaleidoscopic succession of childish variants of old aims and methods: a year in which to come back to his simple mission, that of making boys manly, clever, and happy; if this year's respite from educational Babel could be secured for him, his own life might be saved from triviality and his boys would stand a chance of becoming manly men."

Though I have here pictured only the caretaker and the head master, I might multiply these sad cases by mentioning every grade of person and every type of occupation found in a school.

Much of our class-teaching is glorified kindergarten work. At first this was monopolized by science, with its costly, elaborate, trivial multiplicity of apparatus for the hands to handle and the senses to perceive; while the brainwork behind the senses, which is so much more important, had very little demand made upon it.

The next subject to feel this substitution of play for power was geography. Then came practical mathematics, where you performed a huge heresy if you taught that 5 and 5 equal 10, but were welcomed as an advanced and enlightened teacher if you said that 5 apples added to 5 apples made 10 apples, because you were then bringing mathematics into touch with real life.

Meanwhile, the language teacher began to get his innings, and prevailed upon us to spend time and effort, with gramophones and megaphones, on scientifically prepared imitations of inaccurately formed foreign sounds. The true beauties of style—its grace and its powers, its potency as a method for presenting and emphasizing thought—are absolutely disregarded. One would have thought that classics would have been left alone. The easiest way to deal with it would surely have been to ignore its existence—cease to teach it. But, no! Your true modernist is not for suppression of subjects. He likes his curricula to bristle with a variety of them. But he will reform every method. And in classics he has introduced two original improvements: (i.) the neglect of grammar, which makes it impossible for us ever to divine when and at what stage a boy will know any special case- or tense-form, and (ii.) the introduction of pictures. Any pictures will do. Some are simple, some complicated; but all are distorted. And the relevancy of the pictures is a matter

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beneath contempt. The *pièce de résistance*, in this matter is of course statuary. Sandwiched here and juxtaposed there—anywhere—in admired disorder, are gods and discus-players and legionaries—the amphora, the crater, the cothurnus.

Inspectors whirl about; do not know where they are and what they want. They have no well thought out schemes or ideas which are flexible enough to be adapted and applied to particular circumstances. They are all specialists, and fail in that comprehensive and appreciative view so necessary to envisage the wide area of interests covered by a school.

For the staffs, teaching is made so easy; anything is accepted so long as it is new. Masters seldom think over their own influence and the good they are doing the boys. No; it is their own status, feelings; and I do not fancy that masters treat their responsible situation as serious.

I draw a distinction—tenure and purse should be, have been, fought for; fair promotion too. But have not we gone on too far and brought into the circle of protected interests status and feelings? I rather incline to think that the emasculation I mentioned as generally operative in schools touches us schoolmasters on this side as well as on the side of our classroom work. For one thing, there has been so much talk of the dignity of our profession. Dignity is, after all, a personal possession and attribute. That man has dignity who does not condescend to childishness in his intercourse with others. And dignity does not reside in the thing done, but in the manner of doing it. The head master does not lose or impair his dignity by the act, say, of picking up paper in his playground, but he would if he tossed up every piece in the air and played with it like a kitten. Nor does the assistant master lose dignity, I think, if he walks with his boys two and two.

You will say I have mentioned nothing germane to our titular subject, but there are links.

Now to come to the specific purpose of our discussion. I am not by any means stating that collisions between heads and assistants do at present frequently occur. Collisions—severe, grave ones—have occurred, of course, but on the grave questions of tenure, and so on. And they have much clarified the relations between heads and assistants in these matters. But I rather foresee collisions possible on questions of what is dignified and what derogatory. Say, for instance, a master is asked to take some lessons with little boys—I don't mean, of course, pointedly deposed to such a task out of spite, which, I suppose, is possible—but because the head master honestly considers that to be the best disposition of duty; the experienced old master will probably accept the task and fulfil it with normal loyalty and energy. But will not the young man incline to look on it as an infringement of his dignity? Is not that temper, that attitude in the air, and is it not ministered to by colloquy in the masters' room, by exacerbation of feeling due to a colleague's prompting? That is one distinct case of possibility of wrong relation. I should like that to be discussed.

Here is another. While every one, without a single exception, will agree that it is a head master's duty to ask a class-master's permission to interrupt his lesson (if interruption is for some reason required): is it equally necessary that the head master should knock at the classroom door for permission to enter the room at all, or at the common-room door. Personally, my experience is all against knocking. But our delicate methods are, perhaps, going to alter that. That is point No. 2, on which I should like the record of experience.

A third point is, the work that may reasonably be expected of assistants out of the classroom. In some schools I believe assistants stay almost regularly for from one to two hours after classes have broken up, marking books. What is the experience there? How much should a head reasonably require?

A fourth point. This concerns head masters only, but it is cognate. If inspectors are present in a school, does the head master lose anything in dignity, either for himself or his fellow head masters, by giving a lesson in the inspector's presence? I have heard the point raised. I invite expression of feeling on it.

A fifth point. In one school objection was raised by a staff to the suggestion that masters should, when the school fell in by forms in the playground, join their forms, and accompany them into the schoolroom for prayers. One section of people sees nothing derogatory in this: another section does. May we have views? The point is, not whether the task is inconvenient or unpleasant, but derogatory?

By way of a closing suggestion, may I propose as a cure—or, at all events, a distinct soother—of annoyances arising out of little demands or injunctions of a head master (whether these are felt *by* him or *against* him), that we masters should, all of us, in the first place determine that our own acts and thoughts in school life shall be dominated by only one aim—the welfare of the boys. That will put us on a right basis with ourselves; for I believe that nearly all the unhappiness of school relations arises out of thinking of ourselves, *our* welfare, *our* feelings; the treatment we *get*, not that we *give*. And so in judging the tasks enjoined on us, the attitudes invited of us, let us judge the enjoiner and inviter by this criterion first—the question, namely, is this enjoined with the view of promoting the good of the school, whether in discipline, scholarship, feeling of fellowship, or whatever be the special direction concerned? If the answer is *yes*, then let us try by all means, whole-heartedly to co-operate. If our personal judgment does not approve the specific mode enjoined, let us certainly try to improve that mode, but keep ourselves out of view; and in the end loyally abide by our superior's decision, for only one judgment can co-ordinate school methods, and his is, after all, the *responsible* judgment.

The Chairman invited members of the audience to take part in the discussion, and he suggested that the points to be considered should be taken in the order in which they were presented by the opener.

Mr. Newsome said the points raised by the opener had reference mainly to the intimate personal relations existing between the head master and his staff, and not the much broader subject of the relations of head master and his assistants as a class. But directly the attempt was made to deal with the subject of those relations they were confronted with the personal equation. One of the points they were asked to express an opinion upon was the extraneous duties that an assistant master might reasonably be expected to perform. No assistant master worth his salt would hesitate to render his head master such assistance within reasonable limits. He feared, however, that all head masters were not reasonable in this matter, and occasionally the Assistant Masters' Association received complaints on this score. In fact the matter had reached such a point with regard to one or two schools that the Association had felt itself impelled to consider the whole subject, and to lay down some general lines for the guidance of its members. It was not very long ago that a head master had intimated to his staff that he expected the whole of their time to be at his disposal. That, he thought, was going to the extreme; but one or two of the points that Mr. Addis had put before them seemed to be almost equally extreme. He had apparently experienced some difficulty either in his own case, or in a case with which he had been made acquainted, where some foolish assistant master had objected to accompany his boys in the playground. He could hardly conceive that any responsible assistant master could seriously take up this attitude, and put his own feelings as to what was dignified or derogatory before the interests of the school. It was possible, of course, that a difference of opinion might exist as to what was dignified and what was derogatory, and there were some head masters who were too autocratic in their conduct towards their assistants. He had himself the good fortune to serve under a head master who had contrived to conduct his school without any sort of friction, and who had a pleasant way of suggesting to his masters whether they did not think that such and such a course would be for the benefit of the school. Where there were periodical meetings of the staff, he thought it would be advisable that the head master should himself be present, and the ultimate decision on all matters touching the order and discipline of the school should of course rest with the head. The question of an assistant objecting to teach little boys as being derogatory was also, he thought, an extreme case. If there was one work more difficult and more important than another in the school, it was the teaching of very young pupils, having to do, as it did, with the foundations of education. With regard to the question whether a head master should knock at the door of a classroom before entering, that, of course, must depend very much upon the assistant master and his personal relations with his chief. If there were an assistant master whose boys occasionally got out of hand—and he believed there were such cases—he might possibly feel a little discomposed if his head did not tap at the door before entering the classroom. Here, again, it was a question of the personal equation.

Mr. Patterson said that so far he had only served under two head masters. Both of them were considerably older than himself, and he had never felt the slightest tendency to experience loss of dignity or anything of that kind. As a member of the legal sub-committee of the Assistant Masters' Association, he had heard of not a few cases when such dissensions had arisen,

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and he had often found the assistant master to blame, particularly in the case of young men, who were often very much alive to their own importance and sensitive to any appearance of want of courtesy on the part of the head master. The young man who had been engaged as sixth-form master might foolishly feel annoyed if asked to take a class of little boys, but in two or three more years he would come to take it as a compliment to his efficiency. With regard to the suggestions as to the common room, the tendency of the common room was to bring the young man and the older masters on to a common level. They got into direct contact with one another, and if an assistant master were inclined to behave foolishly he was made aware that his colleagues would not countenance any such conduct. As to the head master entering the classroom without knocking at the door, the only ground on which objection could be taken was that the assistant master might feel that he was not trusted, and that the head master was going round, as it were, spying upon him. It might take all the spirit out of a master's work to feel that he was being watched by his head master. But the head master had not only a right, it was his duty to go into the classrooms in order to see that things were going on properly, and he did not see why the assistant master should object. With regard to the common room, to which the assistant masters retired when off duty, it was intelligible that they might not like the head master to enter here. As to whether assistant masters should be allowed to smoke in the common room, the custom varied in different schools, and it was not a matter simply of what the assistant master liked. In cases where smoking was not allowed the common room was very often empty and members of the staff hardly knew one another, which of course did not conduce to the good of the school. With regard to the question of extra work, cases had come before the Assistant Masters' Association, in which assistants had been told they would have ample time to prepare for their own examinations, and nevertheless extra work had, little by little, been added. If, when he was engaged, the assistant master did not expect that his duties would include, besides teaching in ordinary school hours, correcting in the evening, and possibly supervision of games on half-holidays, he might have cause of complaint; but this would not be so if all this was made clear to him at the time of his engagement. As to the point whether it was derogatory to the dignity of the head master to teach with the inspector standing by, it was, of course, the duty of the inspector to form an opinion of the work of the school as a whole and he would therefore be perfectly justified in hearing the head master teach a class. With regard to the assistant master joining in the games in the playground, he could only conceive a young man with an undue sense of his own importance objecting to it. With regard to the supervision of the boys going upstairs to the dormitories and preventing them from acting in a disorderly manner, he believed most assistant masters would gladly do what the head master desired them to do, understanding that it would be for the good of the school. Speaking generally, assistant masters did not like to feel that they were not trusted, and they did not like to feel that they were being imposed upon by being asked to do something which they had been given to understand they would not be asked to do.

Mr. KAHN said the five points mentioned by Mr. Addis were minor points which, as Mr. Newsome had pointed out, depended for their solution upon a number of simultaneous personal equations. The opener had told them that they must be guided by the question of what was for the welfare of the boys, and he himself would add what was for the welfare of education as a whole. It was quite obvious that it would be for the welfare of the boys that the relations between the head master and the assistant master should be entirely cordial, and if the head master could exercise a little extra politeness it would add to the cordiality and good fellowship, and it seemed to him it was his business to do so. He did not see why the head master should not knock at the classroom door when he was about to enter. The head master would expect the assistant master to knock at his door, and, although the head master might be on his own ground in the assistant master's classroom, it must yet be considered that the assistant master's room was his own particular sanctuary. Then, with regard to the teaching of small boys, that again depended upon circumstances. Supposing that the head master had been in the habit of putting a master of lower qualifications to teach young boys, which was quite a common thing for head masters to do, and he were to ask a master who had taken a high honours degree to take this lower form, he would say that under these circumstances this master might be excused for considering that he had been degraded. But, if the lower form had been taken by masters of the same status as masters of other forms, then of course there could be no possible degradation. Then, as regards the masters joining their forms in the playground, that would depend upon circumstances. He was quite sure that if the head master of Eton were to ask the assistant masters to join the boys in the playground they would consider it derogatory. It was a question how far it was necessary that the boys should be marched upstairs to the dormitories, but, if it was absolutely necessary in the interests of discipline. he did not think the assistant masters would object. But if it was a mere fad of the head master's, if it was not necessary, and the assistant masters had not been consulted in the matter, then he could quite understand how they might consider that they had been subjected to an indignity. He had taught in a school in which it was taken as a matter of course that the assistant masters should march the boys up to their rooms, and no one thought it derogatory. That was in a large school where it was absolutely necessary. He had taught in another school in which it was not done; and if the head master had introduced the practice, it would have been objected to because it was not necessary. He was surprised at the opener's suggestion that it might possibly be considered undignified for a head master to teach in the presence of an inspector. It appeared to him there was no reason why the inspector should not observe the head master's work, as it was his business to judge of the work of the school; and if the head master was engaged in teaching, it was as much the inspector's duty to see his teaching as it was to see the teaching of the assistant masters. He did not think the assistant master should be regarded as a person of lower status than the head master. The assistant master and the head master were colleagues. The head master was simply the first minister, the organizer, and unifier; but, as far as his academic qualifications and experience were concerned, the head master might possibly be inferior to the assistant master. He hoped that the day would come when the term "assistant master" would be abolished, because the term "assistant" suggested a sort of personal dependence. He had been struck with the difference in the tone and in the whole spirit of secondary schools on the Continent simply owing to the fact that the dignity of the assistant master was respected a great deal more than it was respected in this country.

Professor RIPPMANN said his own experience as an inspector had visitor. He did not propose to deal with general questions, been much more favourable than that of Mr. Addis's imaginary but rather to confine himself to some of the points Mr. Addis had raised. As to the question whether it is derogatory for an assistant master to take a class of young boys, in the first place there were extraordinarily few assistant masters who were capable of taking young boys, and wherever he went he suggested that a woman should take them, it being much easier to get a good, sound, sympathetic woman teacher; but, assuming that a man was to teach them, then he must be one who had been carefully trained. It was not a man of exceptional ability (in the academic sense) that was wanted. Generally speaking, a man of exceptional ability was unfit to take young boys because he had been giving so much of his brain to the acquisition of knowledge that he was inclined to disdain questions of method. In the higher stages it was necessary, no doubt, to have academic ability, but lower down in the school method was of far greater importance. With regard to the practice of the head master knocking at the classroom door, this appealed to him on the score of good example, as it would suggest to the boys that the head master was showing respect to the class master, and might have a good effect as a matter of ordinary courtesy, especially as it so frequently happened that the boys came from homes where courtesy was very little cultivated. As to smoking in the common room, he thought, from his own experience, that the prohibition was a rare one. With regard to the question as to whether the head master should be required to teach in the presence of the inspector, there was really no difficulty at all in actual practice. If the head master were a competent teacher he was willing to show his ability, and if he were not he did not want to exhibit his incompetence, and the inspector was spared the agony of listening to bad teaching. As to the work the assistant master should be required to do outside the classroom, it raised the whole question how much work might fairly be expected of an assistant master, a matter upon which he felt very strongly, and of which the importance had been brought home to him by a comparison between boys' schools and girls' schools. How was it that in girls' schools the

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same results could be obtained as in boys' schools with a far smaller number of hours? In the majority of girls' schools the women taught for eighteen or nineteen hours a week, while a man taught for from twenty-five to twenty-seven hours, and yet the results were the same, for the simple reason that in the boys' schools the preposterous idea prevailed that quantity is the great thing, instead of quality. It was unreasonable to expect the assistant master, after so many hours' teaching, to undertake a certain amount of supervision, to correct exercises, and also to devote time to the preparation of lessons. It was humanly impossible to do it, because he must have some recreation, otherwise he would get terribly stale. Women were able to get through the same amount of teaching in a shorter time, because they were given time to prepare the lessons and took interest in their methods. The overcrowding of the time-table was one of the great causes of difficulty in schools; it led to difficulties of overwork and difficulties in connexion with salaries, and made masters irritable, and that irritability often expressed itself in resentment of suggestions of the head master, which otherwise might be accepted in a reasonable spirit. This overwork was sometimes added to by the head master constantly making fresh demands on his assistants on the ground of the welfare of the school. He was quite in accord with the general principle that what one did should be done for the welfare of the school, but it was not reasonable to expect too much. Sad tales could be told of breakdowns in health, especially amongst women teachers, through over-conscientiousness, and a good deal of the friction which one found was due to the over working of the assistant master. But the blame must not be imputed entirely to the head master, who was himself too frequently overworked. When the head master of a large school was expected to do twenty or twenty-five hours teaching, to look after the school, and to manage parents more or less reasonable, could he be expected always to be tactful, always to be gentle, always to be amenable, and always to put things in the nicest way? If his teaching hours were reduced to, say, twelve, and he had more leisure to look after his school, then he would probably be found to possess a sweet temper, and his relations with the assistant masters would be satisfactory.

Mr. Butler said that, having been engaged all his life in teaching in private schools, there were some phases of the relations between head masters and assistants of which he had no personal knowledge. The question of tenure, for instance, was one which had not arisen within his experience, and other questions to which the opener had referred he had not found troublesome at all. He thought that sometimes head masters were apt to forget how much they owed to their assistants, and to what a large extent the work of the school was what it was by reason of the assistants. The occasional expression of a few words of appreciation would tend to make the relations of the head master and his assistants more cordial. The questions which had been raised about dignity, &c., seemed to him to be of small consequence. If the head master was really concerned for the good of the school, and if the assistants chosen by himself were like-minded, he could not understand where the question of dignity could come in. The school ought to be a happy community, all working together for a common aim, and then such trifling matters would not be likely to arise. With regard to the visits of inspectors, he entirely agreed with the last speaker, and was sure that if Prof. Rippmann should visit any school in which he had anything to do he would be extremely pleased to see him and would be quite at ease in teaching before him. At the same time he could quite understand that in many cases head masters might find a good deal of difficulty in teaching before an inspector. Here again the question of the personal equation came in, and much would depend on the character of the inspector as well as that of the head master.

The Chairman said he wished to make briefly a few disjointed remarks on the points discussed. As a rule they had little or no opportunities of looking into one another's schools. He had worked in London for forty years, and it was astonishing how few head masters he had seen teach. He had often had a great desire to know how a certain master would teach a certain subject, but he never had the opportunity, and therefore he was driven to base his methods on his own experiment, assisted by the discourses and discussions of the monthly and other meetings. He thought this question of the relationship between head masters and assistants would be much simplified by getting rid of the term "assistant master"; it was quite a sufficient distinction to have the masters of a school and the "head master." His ideal would be that the community of masters in school might be a kind of Republic, electing their own president for the year or for a term of years. But in order that such an ideal might be adopted everywhere, there should be an accepted system with regard to the status and training of masters. In such places as Harrow, Eton, and Rugby, he believed they might very well elect the head master from among the other masters, and they might make any one of the masters head master for twelve months; but they could not do that in a school where there was a marked difference in the general education and culture. With regard to the teaching of younger children, every one knew, who had had the opportunity of wide observation in schools, that the higher a man's personal qualifications the better would he be fitted to become a teacher of the younger children, provided he be also endowed with the temperament and natural characteristics which would enable him easily to enter into the thoughts, and read the minds, of the very young. There were some men who were peculiarly apt with little ones, and some who were not, and this difference made it necessary that, in placing the masters, each should have assigned to him the class in which he would be happiest, most useful, and most successful. With regard to such questions as entering a classroom without knocking at the door, he could not help thinking that such matters were of very small importance, because everything depended upon the good feeling that should prevail between the members of the staff. But no head master who knew anything about the working of a school would do anything or say anything in a classroom (the class master and the boys alike being present) which would be in the nature of fault-finding or which would be derogatory or offensive towards the assistant master. The first principle that should always guide the head master was to uphold his assistant, and to say nothing and to do nothing in the classroom which would tend to weaken his authority. To his mind, it was inconceivable that a head master should call upon his assistant masters to do things out of the ordinary school times without consulting the convenience and wishes of the person to whom the suggestion was made. There was something to be said about upholding the dignity of the teacher—not the dignity of one teacher as against another, not the dignity of the head master as against the assistant. Teachers had to stand upon their dignity as against outsiders frequently, and they ought to encourage that mutual consideration which made for the harmonious working of the whole. W. E. Gladstone once said: "We honour a profession when we honour a member of that profession," and the reverse of this is also true. With regard to the assistants accompanying the boys in the playground, it had been his privilege to sit upon a County Education Committee, and he had been astonished to hear one of the members of that Committee put forward the distinction between the secondary school and the elementary school, that they never found the boys in the secondary schools marching up to their classrooms in a sort of military order. He supposed that in a large school it was an advantage to have rhythmical movements instead of a clashing and rushing upstairs and downstairs and along the corridors, and so they must have a certain amount of military order and discipline beth in large secondary schools and the elementary.

Mr. Addis, in replying upon the discussion, said he hoped every one would understand that these troubles did not affect himself: they were purely theoretical, but he had thought these things as worth while presenting because at the last General Election he found he had not the remotest idea of how complete the feeling of the people of England had turned; and, if one did not from time to time investigate or examine the data upon which one's impressions were based, one might sometimes reach a state of extraordinary surprise. So when one of those instances turned up in his own experience, he began to think, "Well, is it impossible that I, through not reinvestigating these points, may be entirely out of touch with the feeling and attitude of masters in schools?" All the points raised were points that had occurred in actual practice, though not in his own experience, and the reason he had suggested this subject was to elicit opinions from people who had thought about the matter. He had not expected anything different from what had been said and had expected to find a consensus of opinion that no dignity was lost and that there was no sense of derogation in the mind of the master. As to the allowing of smoking in the common room he knew of no school where a distinction was not made between class hours and non-class hours; but a good deal might depend upon the position of the common room. If the common room could be seen into by people coming in at the door then

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perhaps a restriction might be made. With regard to the working out of school hours, what he had in mind in referring to it was not extra or evening duty, but the question of rapid departure at 4 o'clock. People varied, and some people who came late made up for it by departing early, and if masters were always out of school on the tick of four, such punctuality might be rather unhealthy. The point was one of some importance: in one large London school the arrangement was made and by agreement that the assistant master should not consider his day over until half-past four, although school stopped at four. He was very glad to hear Prof. Rippmann's remark as to the importance of method increasing in the lower classes of the school. It was a valuable idea, and one which was likely to be overlooked, that the man who had been specially trained in the direction of teaching the little ones was, although he might not be a brilliant scholar, the best man for the lowest school. One point as to which he was quite in agreement was as to the expression "assistant" master. It did not seem to him an altogether happy expression, because it seemed to make a slight distinction between men who were really on the same level; but co-ordination would be impossible without some slight distinction. If they could get rid of the term he should be very glad indeed. He had to thank the whole company for having dealt very closely with these five questions, and it had been exceedingly interesting to himself to hear the opinions of responsible head masters, and such representative assistant masters as the President and Treasurer of the Assistant Masters' Asssociation on the subject.

A hearty vote of thanks was passed to Mr. Addis and also to Dr. Wormell for presiding.

REVIEWS.

A Scots Classic.

The Bruce. By John Barbour, Archdeacon of Aberdeen. Edited by W. M. Mackenzie, M.A., F.S.A. (Scot). (5s. net. A. & C. Black).

"Who now reads Cowley?" asks Pope, and some may think that a new edition of the National Epic of Scotland by the old Archdeacon of Aberdeen can meet with no demand. They are mistaken; Barbour is still vitally alive both in Scotland and in the Colonies. The great incidents in the Scottish War of Independence are his—Bannockburn is his, as Marathon, Salamis, Plataea are the possession of Herodotus, and Scott in "The Lord of the Isles" yearly makes him known to the tourists on the West Coast. He is even more than this—he is an Imperial asset in a sense that Shakespeare and Chaucer can never be. Some years ago he came to his own in India in a fashion that fairly astonished the rulers of that country. One of the great educational firms had issued for native use a little book on Wallace and Bruce. Now all such works have to receive the sanction of the Viceroy in Council in order that no statement, however slight, that may offend the national or religious sentiment of India may incautiously pass. The book was put before two Scotsmen high in office, and they patriotically decided that no child, at home or abroad, could know too much about Stirling Bridge and Bannockburn. The result at first perplexed the Government. Something had clearly taken place—were we on the verge of another Mutiny? Investigation proved that in this case Indian unrest was Imperial attachment. All over India children had been playing a game with breathless interest: it was the pursuit, by the bloodhound of John of Lorn, of Bruce and his foster-brother, and the descendant of the hunted king was the popular Viceroy, Lord Elgin. Barbour had gone home, and what he told in Aberdeen more than five hundred years ago had become Imperial. The principle of the anecdote has a wider application. Whatever educational writers may say about the Jutes and Angles, the Heptarchy, and the wives of Henry VIII., let them remember that, as far as South Africa is concerned, William the Silent and the Relief of Leyden are now an integral portion of British Colonial history ranking with the taking of Quebec. John Bull must broaden the basis of Imperial interest, and annex the history of both Holland and the Huguenots for their descendants in his Empire to-day.

Barbour is older than Chaucer, but is read with much greater ease, and indeed with very little practice can be mastered and followed by the general reader. This is due to philological and other causes that need not be mentioned here: he wrote "Inglis," the common spoken idiom from York to Aberdeen, and his work is thus the great treasure-house of Northern English. He was Archdeacon of Aberdeen in 1357, and was a commissioner for the ransom of David II. He was a man of affairs, not of the cloister, and an Auditor of Exchequer. His poem was finished probably about 1376, and in the following year a sum of ten pounds was assigned to him by Royal Command. He died on March 13, 1396. He saw the spoils of Bannockburn hung in his own Cathedral, and down to the Reformation his anniversary was kept. He ranks as the father of Scottish history and literature.

By those who probably never read him he has been treated as a romancer. Green dismisses him ignorantly enough in a line or two; Cosmo Innes thought he was content with a general historical framework but was careless as to details; Sir Herbert Maxwell, whose ancestors we believe are on the Ragman Roll for treason to their country, insinuates that his patriotism was official and stimulated by his pension; others believe that his work is a romance, because he himself styles it so, and that little or nothing can be learned from a writer that confuses Bruce, the competitor with Baliol, and Bruce the King, the grandson. All such criticism is the result of ignorance of the text. It is detail in which Barbour is strong. The Rolls and contemporary documents show how accurate he is in his figures and facts, while of the contemporary feeling of Churchmen for necromancy, legends, saints, the Archdeacon knows simply nothing, and proclaims his intention to tell "a soothfast story." The editor of the present edition convincingly, we think, demolishes the idea, too hastily assumed by Burton, that Barbour confused the two Bruces, a thing rather impossible for either the author or his readers. A romance his book is, as he says, but a romance only in the technical sense of form following the metrical octosyllabic couplet. There was no other form in verse to follow. Barbour and his readers knew a whole library of forgotten French literature of this school, and, when Bruce passed over Loch Lomond in his retreat after Methven, Barbour says the King kept up the spirits of his followers by the recitation of the "romances" of Ferambrace, Roland, Oliver, the peers of Charlemagne, and Hannibal. But of the romance spirit there is nothing in "The Bruce." It is detailed and annalistic, full of facts and local scenes. The notes of the new edition will show—as Dr. Joseph Bain long ago pointed out—how closely Barbour sticks to the "soothfast story" which he professed to write. He wrote it before he was pensioned, and with no expectations. Bruce and Sir James Douglas are the two heroes, and nothing romantic, but only the practical, is related of them.

The present edition by Mr. Mackenzie was needed, and is a thorough piece of historical and literary work. The older editions of Pinkerton, Jamieson, and Cosmo Innes are now hard to come at, and the edition of Skeat leaves the history unsettled. Chaucer has of late been philologically overdone, and the claims of Northern English were well worthy of attention and adequate treatment. Great labour has been expended by the editor on his book, whose modest price and form are quite inverse to its real value as a firstrate contribution to history and philology. Here and there fresh touches may be given in a second edition—for instance, Mr. Mackenzie may explain in what sense Randolph was Bruce's "nephew," and he may usefully make some additions to the Glossary (full and careful though it is), especially for the benefit of Southrons. But Barbour's narrative, the staple of Sir Walter Scott, can now be read with interest by the general reader, who will find much new information in the appendixes. The historical site of Bannockburn, and generally the details of the battle, the editor shows, must be conceived in accordance with Barbour's account, which is clear and consistent—the poet must have seen the ground, and we know he conversed with actors in the war.

"James Watt," writes Mr. Carnegie in his life of the great engineer, "had been fed on Wallace and Bruce, and, when things looked darkest, his national hero, Wallace, came to mind. Did Wallace give up the fight? Did Bruce falter? 'Scots wha hae' has pulled many a Scottish boy through the crises of life when all was dark, as it will pull others yet to come." Bruce was buried in Mr. Carnegie's native city of Dunfermline, and Barbour was Bruce's *sacer vates*. Why should Barbour lack a worthy memorial on his native street, in sight of the University, and within fifty yards of his own Cathedral?

W. K. L.

The Romance of a Famous Shire.

The Heart of Scotland. Painted by Sutton Palmer. Described by A. R. Hope Moncrieff. (7s. 6d. net. A. & C. Black.)

"Among all the provinces in Scotland," writes Sir Walter Scott, "if an intelligent stranger were asked to describe the most varied and the most beautiful, it is probable that he would name

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the county of Perth. But Mr. Moncrieff goes a long step further. "Scott," he says, "was an alien in Perthshire, his judgment of which, then, should be 'neither partial nor impartial,' as the Provost of Portobello desired; while it is so much my native heath that I give it no place but that of first in all the counties of Britain." We lack courage to contest the proud claim, for Mr. Moncrieff has tramped all the counties through and through with open eye, while we have mostly snoozed through them in night trains. Whatever may be the historical and picturesque claims centring in "Auld Reekie," or the arguments for "Glesca" and its environs in point of population and commerce, topographically at least Perthshire answers to the title of the volume, while it unquestionably takes first rank if the comparison is to rest on variety of natural beauty as well as historical and romantic incident—it is the heart of Scotland, "not only as containing its most famous scenery, but as best blending Highland and Lowland charms, and as having made the focus of national life and history." In the handsome series of "Colour Books," of which the present volume is the most recent member, the first consideration, we suppose, is really the pictures. Mr. Sutton Palmer furnishes twenty-four full-page illustrations, which are perhaps as fairly representative of the scenery and of the historical and literary associations as any other two dozen pictures would be. They catch the spirit of the localities, and they are very effectively reproduced in colours. It is Mr. Moncrieff's humour to hope, "after the words of another poet, that 'the pictures for the page atone'"; otherwise we should vehemently reject all necessity for such atonement—except indeed for beguiling a case-hardened reviewer to read the book straight through when samples might have adequately served the occasion. If "Bonnie Scotland" pleased so many readers that it had to be supplemented by the "Highlands and Islands," and then the "Highlands and Islands" had to be supplemented by "The Heart of Scotland," the only inference we can reasonably draw is that there still lies before us an indefinite and enchanting vista of further supplements. Mr. Moncrieff leaves all topographical details to the matter-of-fact map and guide-book—neither cartographer nor motorist would find much guidance from him. He "modestly presents himself, rather as a gossiping companion to the guide-book which, in its up-to-date form, dwells more on details of useful information, and has less room for giving strangers some notion what life was in this region before its flush of romance had died away like an Alpine glow." He assumes that the features of the scenery are familiar in Scott's verse, and therefore economizes epithets of hackneyed admiration; he is not so sure about the general mastery of Scott's prose, and therefore he tells freely tales that "are mostly to be found transfused into his romances or tacked on them as illustrations in his lively introductions and notes." But there is much more than that, though it is difficult to avoid Scott anywhere in Perthshire. And the whole of the material is shaped and presented by an expert literary artist working in absolute freedom. Mr. Moncrieff is full of his subject, and—he lets himself go, undismayed by critics of the preceding volumes that have accused him of "being flippant, discursive, garrulous, gossiping, everything that your gravely plodding writers are not." "It must be confessed," he admits, "that, as a model of style, I have an eye rather on the upper waters of the Tay, with its swirls and eddies and ripples, than on its broad and placid flow by the fat carse of Gowrie"; but, as "one loves to please all tastes, within reason," he does occasionally "try to be as steady and slow as the mill-lead at Perth." We decidedly prefer the swirls and eddies and ripples. Not a few autobiographical points add special interest (and humour) on various occasions—his first smoke, his adventures as an officer of volunteers on the Inch at Perth, his first literary article, his being taken into the nursery "to see Mr. Haldane invested with his first dignity as 'the new baby,'" and so forth. There could be no more sprightly and engaging companion through Perthshire. A very handsome, brilliant, and delightful volume.

Conic Sections.

The Analytical Geometry of the Conic Sections. By the Rev. E. H. Askwith, D.D. (7s. 6d. net. A. & C. Black.)

Readers of Dr. Askwith's earlier work on "Pure Geometry" will be pleased to welcome the author's recently published text-book on "The Analytical Geometry of the Conic Sections." The earlier and later treatises may be regarded to some extent as complementary, for, by frequent reference to his "Pure Geometry" in the later chapters of his new work, the writer has, in a measure, avoided giving the same information a second time. The present volume is more important than its predecessor with regard to size, and is fully illustrated. Both have been inspired by the teaching of the subject-matter forming the contents, and both possess the excellence born of thorough knowledge combined with the power of imparting it. The author is quite justified in claiming that his work is not stereotyped in character. The methods of framing many of the equations leave the well known lines and follow new ones. Thus, for instance, equations to a straight line are made to depend initially on the vanishing of a triangular area. The originality which this and other variations from the ordinary treatment introduce into the text-book is very refreshing and attractive. At times, however, one is forced to ask whether it is well to derive one equation from another not more fundamental than itself, rather than establish each independently from the geometry of its own figure. The reduction of the general equation of a straight line to the normal form and the treatment of perpendiculars to a straight line both from the origin and from points in general, are very interesting, and simpler than in many text-books. Again, the condition that the general equation of the second degree may represent a pair of straight lines is readily deduced without the solution of a quadratic equation. The method adopted in the above piece of work leads to the observation that a student of Dr. Askwith's "Analytical Geometry" must be ever on the alert in order that he may fully realize, and bring to bear on later passages in the book, implied as well as definitely expressed facts.

The seventh chapter opens with a most useful diagram illustrating the nature of the sections made by a variable plane cutting a complete right circular conical surface. The earlier portions of this chapter are devoted to constructing, in their standard forms, the equations of the conics (usually so called), and to discussing a few of the leading properties of the curves. The writer then establishes the fact that the general equation of the second degree always represents some conic section, and derives, with his usual skill, various important equations which apply equally to all conics. We must be content with but brief reference to the successive chapters of the volume. The eighth to the thirteenth, inclusive, are taken up with the detailed treatment of each of the principal conic sections by means of its Cartesian equation, and with the discussion of the polar equation of a conic, of conics in general, and of similar and confocal curves of the second degree. In the subsequent chapters the individual character of the treatise is very marked, for Dr. Askwith assigns a position of merely secondary importance to trilinear co-ordinates, whilst, on the other hand, he treats with perhaps unusual fullness the theory of homogeneous co-ordinate systems in general, introducing the subject to the student through the special system of areals, since, in his opinion, the particular is more easily grasped than the general. This is, indeed, often the case, and yet some of the best teachers advocate the opposite course, and, in point of fact, succeed in first making clear the demonstration of a proposition in all its generality; afterwards only do they proceed to place restrictions of various kinds which lead to special and less complex forms. Chapter xvi. takes up the subjects of cross ratios, harmonic section, and involution, and is followed by the discussion in due order of invariants, tangential equations, envelopes, and covariants. The close connexion between tangential and corresponding point equations is very carefully brought out. We are told in the preface that possibly some apology is needed for the publication of a fresh work on the subject, and that the book must itself supply the same. That the work justifies its existence no reader will doubt.

GENERAL NOTICES.

CLASSICS.

The Knights of Aristophanes. Edited by Robert Alexander Neil, M.A., LL.D. Aberd. (5s. net. Cambridge University Press.)

This is a cheaper reissue of the first edition, which appeared in 1901, a few months after the lamented death of the accomplished editor—"the only direct memorial of Neil's work as a classical scholar which his scanty leisure and fastidious pen permitted him to leave." It is a masterpiece of learning and judgment, and will long keep Neil's memory green among classical scholars.

The Silvae of Statius. Translated, with Introduction and Notes, by D. A. Slater, M.A., Professor of Latin in the University College of South Wales and Monmouthshire. (3s. 6d. net. Clarendon Press.)

Prof. Slater follows the Oxford recension of the text, with very occasional divergence; and, as the textual problems, if not all settled, are now substantially mastered, it is time that English readers should

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have a translation. "The style of Statius is so extremely artificial, and his meaning at times so hard to grasp, that it is usually difficult, and often impossible, to produce a rendering that shall be at once idiomatic and faithful to the original." In the circumstances, Prof. Slater has struggled manfully with the conundrums, and, though the mark of translation is impressed on his pages, he must be conceded a substantial success. The notes might well have been extended; but, perhaps, he will one day give such extension in a commentary. The introduction, narrating the life of Statius and the literary history of the "Silvae," is reasonably full and instructive. We are very glad to welcome this new addition to the excellent series of Oxford translations.

Messrs. George Bell & Sons issue, in a fresh volume of their "Classical Translations," Books IX. and X. of the very careful prose rendering of *The Iliad of Homer*, by E. H. Blakeney, M.A., Head Master of the King's School, Ely (1s.). The foot-notes continue to offer useful and interesting literary illustrations. There is a brief excursus to Book X., on the authority and authenticity of the "Doloneia."

Mr. John Murray issues the *Classical Association Proceedings*, 1908—the sixth volume of the series (2s. 6d. net). Besides the business affairs of the Association, there is a goodly number of excellent papers read at the annual general meeting, Mr. Asquith's Presidential Address, the Interim Report of the Pronunciation Committee on the Pronunciation of Greek, the Report of the Curricula Committee, &c. The brochure ought, of course, to be in the hands of all that are interested in the progress of classical study and research.

MATHEMATICS.

The Elements of Geometry in Theory and Practice. Parts I. and II. By A. E. Pierpoint, B.Sc. (2s. 6d. Longmans.)

This is the complete text-book. Each of the two "Parts" is also issued separately, and the earlier has already been noticed in this column. Part II. is quite equal in standard to its predecessor, and the two Parts together form a very useful work for the junior student. The subject is treated in accordance with the views of the modern school of thought—namely, first experimentally, and later in parallel theoretical and practical courses to be followed concurrently. Together with the text, clear diagrams, numerous exercises, with hints for solution (the latter appearing at the close of the volume), and examination papers help to form the complete contents of the book.

Modern Arithmetic. Parts I. and II. By H. Sydney Jones, M.A. (3s. and 2s. 6d. Macmillan.)

The plan of the work and the manner in which it has been carried out are in thorough harmony with the title. The chief features can, on the whole, no longer lay claim to absolute novelty, seeing that the points to which the author directs special attention in the preface are mainly the following: the introduction of decimals and metric measurements at a very early stage in the course laid down by him; the provision of abundance of material for experimental work; the choice of practical problems dealing with subjects of actual interest and importance; the supply of exercises suitable for a training in the mental and oral solution of simple questions. Elementary work on statistics receives deserved attention, and many problems involving the evaluation of averages serve to illustrate the importance of the underlying principle. A most interesting discussion of the elements of the subject opens the section on Stocks and Shares. The first volume covers the course necessary as a preparation for Junior Local Examinations, and the second meets the requirements of Army and Civil Service candidates. The book is more suitable for teachers and for class purposes than for the student working alone, from whose point of view the explanations in many instances stand in need of further elaboration. Numerous well executed diagrams are helpful to readers.

Examples in Practical Arithmetic. Part II. Compiled by J. L. Martin. (6d. John Murray.)

A continuation of the very useful little work to the first "Part" of which we drew attention in these columns some months ago. The leading topics that form the subject-matter of the more advanced volume now before us are proportion, the principle of percentage with some of its many applications, the treatment of averages, and the mensuration of simple plane and solid figures. Some pages are devoted to a consideration of the "Use of Literal Symbols" and equations, and it is perhaps worth while to notice the curious misprint "lateral" for "literal," which recurs several times. The exercises present much variety, and are therefore calculated to interest the pupil in his arithmetical work. It may be well to remind the reader that the author has based his compilation on Consterdine and Andrew's "Practical Arithmetic." In these days, when drawing is so widely taught to the youngest children, the rough appearance purposely given to the "hand sketches" constituting a number of the diagrams seems to us to be out of place. Why should a sketch of the door of a church look like a milestone that has seen better days rather than like what it is supposed to represent?

SCIENCE.

Air Currents and the Laws of Ventilation. By W. N. Shaw, Sc.D., F.R.S., Honorary Fellow of Emmanuel College, Cambridge, Director of the Meteorological Office. (3s. net. Cambridge University Press.)

"Every house or building, considered from the point of view of its ventilation," says Dr. Shaw, "is an extraordinarily elaborate combination of aeromotive forces, due to wind acting in various ways, temperatures in flues, and sometimes blowing fans in addition, with resistances of chimneys, ducts, chinks, gratings, and possibly also of large areas of porous walls. On the electrical analogy the whole presents a complication of aeromotive forces and resistances, generally of a varying character, the interrelation of which no electrical engineer would care to specify in figures." Little marvel, then, if difficulties of ventilation are so often troublesome to deal with. Dr. Shaw considers (1) the laws of flow in air circuits and the verification of them; (2) the physical principles applicable to the ventilated space; and (3) the application of physical laws to practical ventilation. The inquiry is patient, careful, and thoroughly scientific; and it is set forth with remarkable lucidity and relieved with touches of humour. "When all is said and done, the successful management of a system of ventilation is a physical experiment of great difficulty."

The Essentials of Botany, by Joseph Y. Bergen, A.M. (5s., Ginn), is, if we mistake not, a new issue of a book that has enjoyed favour in the schools for the past dozen years. It is especially intended "for the use of secondary schools which devote a year to botany." The description is very full and careful, and laboratory instructions are appended. Frontispiece, 14 plates, and about 250 figures.

The Tutorial University Press issues a sixth impression (fifth edition) of *A Text-Book of Sound*—the first volume of "The Tutorial Physics"—by Edmund Catchpool, B.Sc., revised and enlarged by John Satterley, B.A., B.Sc., late Assistant in Physics at the Royal College of Science (4s. 6d., Clive). An excellent text-book, with abundant examples (answers appended) and 148 figures.

The First Part of *Engineering Wonders of the World*, a work that Messrs. Nelson have commenced to issue in about twenty fortnightly Parts (7d. net each), challenges the record of serial enterprise. The editor, Mr. Archibald Williams, whose popularization of scientific achievements we usually welcome at Christmas time, opens with an admirable article on "Ancient Engineering," which is followed by able and attractive papers on "The White Pass and Yukon Railway," "The Royal Albert Bridge," "The Salving of the Battleship 'Gladiator,'" and "The Rotherhithe Tunnel"—64 pages of varied scientific matter in popular form, with 68 excellent illustrations and a coloured plate. As Mr. Williams justly remarks, and the present Part enforces, "there is no more fascinating reading in the world than the story of machinery and what it has accomplished for the benefit of mankind." The complete work will cover practically the whole field of engineering, and "a large part of the letterpress is from the pens of professional engineers, whose status is sufficient guarantee for the worth of their respective contributions": thus, "The Rotherhithe Tunnel" in the present Part is from the pen of Mr. E. H. Tabor, M.Inst.C.E., the Resident Engineer in charge of the construction. "There must be thousands of persons living in this great workshop of ours who are eager to understand how such things as a tunnel, a suspension bridge, a battleship, a sky-scraper, or a lighthouse are constructed." Undoubtedly; and there need be no hesitation in predicting a wide and warm reception for this able, generously furnished, and most instructive and suggestive work.

ENGLISH LITERATURE.

"Cambridge English Classics."—*The Authorised Version of the English Bible*, 1611. Edited by William Aldis Wright, Vice-Master of Trinity College, Cambridge. In five vols. (20s. net, or 4s. 6d. net any one vol. Cambridge University Press.)

The Authorised Version of the English Bible—the "book which, if everything else in our language should perish, would alone suffice to show the whole extent of its beauty and power"—is now, very properly, included in the scholarly series of "Cambridge English Classics." "Many people are unaware of the fact that the text of modern English Bibles differs very considerably from that of the original Authorised Version of 1611." In 1611 there were two issues, a He Bible and a She Bible—so called from different readings in Ruth iii. 15. The first issue gave: "And when she helde it, he measured sixe measures of barley, and laide it on her: and *he* went into the citie." The second issue gave: ". . . and *she* went into the citie." Modern Bibles are variations of the She Bible; the present is a reprint of the He Bible—"for the first time an absolutely faithful reproduction of the original." "The original edition was a handsome black letter folio, with two columns on a page. In the present reprint each page represents one of these columns, so that a complete page of the original text is seen at the opening of two opposite pages of the reproduction." Of course, the type is more modern. The name of Mr. Aldis Wright guarantees the most competent and careful editing; and the excellence of the workmanship of the Cambridge University Press is thoroughly maintained. Volume I. contains Genesis to Deuteronomy; Volume II., Joshua to Esther; Volume III., Job to Malachi; Volume IV., the Apocrypha; and Volume V., the New Testament.

Shakespeare's Complete Sonnets. A New Arrangement, with an Introduction and Notes, by C. M. Walsh. (5s. net. Fisher Unwin.)

The introduction is a concise and trenchant essay, severe on Thorpe, critical of speculation upon his puzzling dedication, and hopeless of any

(*Continued on page* 214.)

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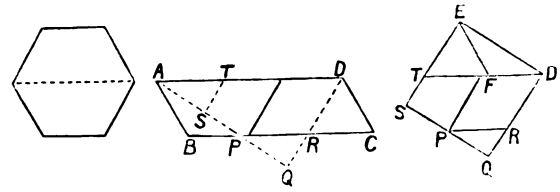
Solution in detail by H. M. TAYLOR, M.A., F.R.S.

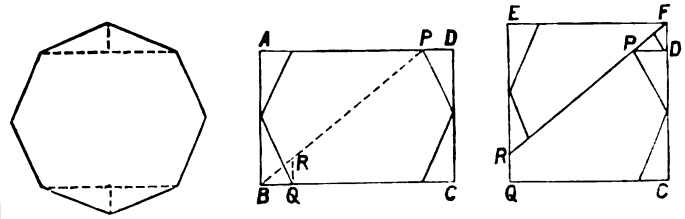
The following geometrical constructions show how to cut (1) a regular hexagon into five parts, (2) a regular octagon into eight parts, which can be fitted together to form a square:—

(1) Take a regular hexagon (inscribed in circle of radius 2) and divide it into two halves by cutting it along a diameter joining two vertices. Now fit these two pieces together in the position represented in the figure, so as to form a parallelogram ABCD, where AB = 2 and AD = 6. Take a point P in BC such that AP = $\sqrt{(6\sqrt{3})}$; join AP and produce it to Q, and draw DQ at right angles to AQ meeting BC in R. From



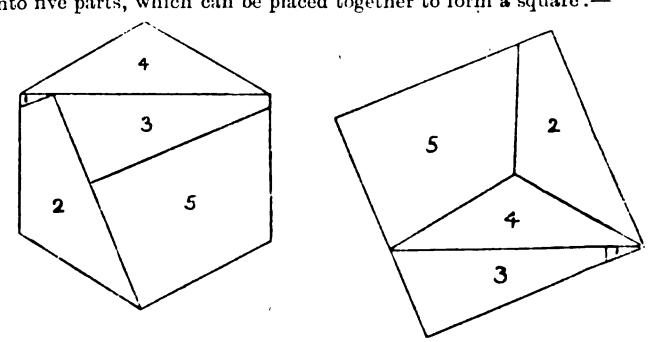
AP cut off AS equal to PQ, and draw ST at right angles to AS meeting AD in T. Then, if the lines AP, DR, ST be cut, the hexagon will have been divided into five parts which can be fitted together to form a square. Translate the triangle AST to PQR, the triangle ABP to EFD, and the triangle DRC to ETF. Then the figure ESQD will be be a perfect square.

(2) Take a regular octagon (inscribed in circle of radius 2). Draw a diameter, joining two opposite vertices, and draw two diagonals parallel to this diameter. Cut the octagon along those two diagonals, and divide each of the triangles so cut off into two equal triangles. Now fit these five pieces together in the position represented in the figure, so as to form a rectangle ABCD, where AB = $2\sqrt{2}$ and AD = 4. Take



points P, Q in AD, BC such that AP = CQ = $\sqrt{(8\sqrt{2})}$. Join BP, and draw QR parallel to CD to meet BP in R. If the lines BP, QR be now cut, the octagon will have been divided into eight parts which can be fitted together to form a square. Translate the triangle ABP to ERF and the triangle BQR to PDF. Then the figure EQCF will be a perfect square.

Note.—Professor STEGGALL sends, independently, the same solution for the hexagon, and the Proposer for the octagon as Mr. H. M. TAYLOR; Mr. W. E. PHILIP, H.M. Inspector of Schools, sends the following method of dissection by means of which a regular hexagon may be cut into five parts, which can be placed together to form a square:—



16590. (*Communicated by* C. M. ROSS.)—If

$a_1yz + b_1(y+z) + c_1 = 0$, $a_2zx + b_2(z+x) + c_2 = 0$, $a_3xy + b_3(x+y) + c_3 = 0$,

are true for an infinite series of values for x, y, z; prove that in general

$$a_2c_3 + a_3c_2 = 2b_2b_3, \quad a_3c_1 + a_1c_3 = 2b_3b_1, \quad a_1c_2 + a_2c_1 = 2b_1b_2.$$

Solution by G. N. WATSON, B.A., *and the* PROPOSER.

[This Question was originally set in the *Camb. Math. Trip.*, Part I., May 18th, 1906.]

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From the first two equations

$$-z = \frac{b_1y+c_1}{a_1y+b_1} = \frac{b_2x+c_2}{a_2x+b_2},$$

i.e., $xy(a_2b_1-a_1b_2)+x(a_2c_1-b_1b_2)+y(b_1b_2-a_1c_2)+c_1b_2-c_2b_1=0.$

If this equation is not an identity (*i.e.*, if $a_2b_1-a_1b_2$, $a_2c_1-b_1b_2$, $b_1b_2-a_1c_2$, $c_1b_2-c_2b_1$ are not all zero), we get, on making use of the third equation,

$$-x = \frac{(b_1b_2-a_1c_2)y+c_1b_2-c_2b_1}{(a_2b_1-a_1b_2)y+a_2c_1-b_1b_2} = \frac{b_3y+c_3}{a_3y+b_3}.$$

We consequently get definite values for y unless

$$b_3 : c_3 : a_3 : b_3 = b_1b_2-a_1c_2 : c_1b_2-c_2b_1 : a_2b_1-a_1b_2 : a_2c_1-b_1b_2.$$

Consequently, $b_1b_2-a_1c_2 = a_2c_1-b_1b_2$.

i.e., $a_1c_2+a_2c_1 = 2b_1b_2$,

and each of the ratios

$$\frac{b_3}{b_1b_2-a_1c_2},\ \frac{c_3}{c_1b_2-c_2b_1},\ \frac{a_3}{a_2b_1-a_1b_2},\ \frac{b_3}{a_2c_1-b_1b_2}$$

is equal to $\dfrac{a_3c_1+a_1c_3-2b_3b_1}{c_1(a_2b_1-a_1b_2)+a_1(c_1b_2-c_2b_1)-b_1(b_1b_2-a_1c_2)-b_1(a_2c_1-b_1b_2)}$;

hence $a_3c_1+a_1c_3 = 2b_3b_1$, and similarly $a_2c_3+a_3c_2 = 2b_2b_3$.

16604. (Lt.-Col. Allan Cunningham, R.E.)—Show how to use tables of the roots $(y_2, y_3, y_4, y_6, y_8, y_{12})$ of the congruences

$$y_2^2+1 \equiv 0,\quad (y_3^3\mp1)\div(y_3\mp1) \equiv 0,\quad y_4^4+1 \equiv 0,\quad (y_6^6+1)\div(y_6^2+1) \equiv 0,$$
$$(y_{12}^{12}+1)\div(y_{12}^4+1) \equiv 0 \pmod p$$

to factorize numbers $N = (x^{12}+y^{12})\div(x^4+y^4)$,

where x and $y > 1$ and all symbols are integers, and give an example with $N > 10^7$.

Solution by the Proposer.

The congruences in the Question are all supposed to be formed to the same prime modulus (p). (This should have been stated in the Question.) To them may be added the congruences $y_1\mp1 \equiv 0 \pmod p$, the solution (y_1) of which is obvious. These congruences give

$$y_1 \equiv \pm1,\ y_2^2 \equiv -1,\ y_3^3 \equiv \pm1,\ y_4^4 \equiv -1,\ y_6^6 \equiv -1,\ y_{12}^{12} \equiv -1 \pmod p,$$

for every prime (p) of form $p = 24\varpi+1$ in the tables. Hence

$$y_1^{12} \equiv +1,\quad y_2^{12} \equiv +1,\quad y_3^{12} \equiv +1,\quad y_6^{12} \equiv +1,$$

and $$y_4^{12} \equiv -1,\quad y_{12}^{12} \equiv -1 \pmod p.$$

Hence $x^{12}+y^{12} \equiv 0 \pmod p$, and $x'^{12}+y'^{12} \equiv 0 \pmod p$,

where x = any of y_1, y_2, y_3, y_6, and y = any of y_{12}; also x' = any of y_3, y_6, and y' = any of y_4. And more generally

$$X^{12}+Y^{12} \equiv 0,\quad X'^{12}+Y'^{12} \equiv 0 \pmod p,$$

where $X = mp\pm x$, $Y = mp\pm y$, $X' = mp\pm x'$, $Y' = mp\pm y'$.

And note that if the values of any pair of (x, y), (x', y'), (X, Y), (X', Y') contain a common factor (μ), this factor should be rejected, as it is desirable that the two members (x, y), (x', y'), ... should be mutually prime.

Note that, as $x^{12}+y^{12} = (x^4+y^4).(x^{12}+y^{12})/(x^4+y^4)$, some of the factors above obtained may turn out to be factors of (x^4+y^4), and some of $(x^{12}+y^{12})\div(x^4+y^4)$.

The factor (x^4+y^4) may be separately factorized by a similar process, by aid of tables of solution of $y_1^4\mp1 \equiv 0$, $y_2^2+1 \equiv 0$, $y_4^4+1 \equiv 0$.

Example.—The Proposer has compiled a series of the above tables which are now complete up to $p > 32000$ (these are now in course of publication). These tables give

$$969^{12} \equiv (51.19)^{12} \equiv \overline{1},\ \text{and}\ 918^2 \equiv (51.18)^2 \equiv \overline{1} \pmod{2593};$$
$$1881^{12} \equiv (99.19)^{12} \equiv \overline{1},\ \text{and}\ 1782^2 \equiv (99.18)^2 \equiv \overline{1} \pmod{3433};$$
$$630^4 \equiv (35.18)^4 \equiv \overline{1},\ \text{and}\ 665^6 = (35.19)^6 \equiv \overline{1} \pmod{1609}.$$

Rejecting the common factors 51, 99, 35 respectively, it is seen that $(19^{12}+18^{12}) \equiv 0 \pmod{1609.2593.3433}$; and (on actual trial) it is found that $(19^{12}+18^{12})\div(19^4+18^4) = 1609.2593.3433$.

Also the tables give $19^4 \equiv 2^2 \equiv \overline{1} \pmod{17}$, and as $18^1 \equiv +1 \pmod{17}$, it follows that $19^4+18^4 \equiv 0 \pmod{17}$; and it is found that

$$(19^4+18^4) = 17.13841.$$

This number $(19^{12}+18^{12})$ contains 16 figures.

Note.—This process, though it suffices to detect pairs of bases x, y, such that $(x^{12}+y^{12}) \equiv 0 \pmod p$, where p is a given prime, is not convenient for finding factors of *given* numbers $(x^{12}+y^{12})$, and is also not convenient for detecting high primes (as it is not exhaustive).

16616. (Professor Neuberg.)—Sur les côtés d'un triangle ABC on construit extérieurement trois rectangles BCDE, CAFG, ABHK dont les trois hauteurs CD, AF, BH ont une somme donnée l. Trouver le maximum de la somme des aires des triangles CDG, AFK, BHE et celui de la somme $DG^2+FK^2+HE^2$.

Solution by C. M. Ross.

The areas of the triangles CDG, AFK, BHE are

$$\tfrac{1}{2}xy\sin C,\quad \tfrac{1}{2}yz\sin A,\quad \tfrac{1}{2}zx\sin B,$$

where x, y, z are CD, AF, BH. Now, let S be the sum of the areas, then $2S = xy\sin C+yz\sin A+zx\sin B = \sin C/c\,(cxy+ayz+bzx)$.

To find the maximum of $ayz+bzx+cxy$. Let

$$u = ayz+bzx+cxy \quad \ldots\ldots(1).$$

Also $$l = x+y+z \quad \ldots\ldots(2).$$

Differentiating $du = (cy+bz)\,dx+(az+cx)\,dy+(bx+ay)\,dz = 0$,

and $$0 = dx+dy+dz.$$

Hence $cy+bz-\lambda = 0$, $az+cx-\lambda = 0$, $bx+ay-\lambda = 0$ \ldots\ldots(3),

where λ is undetermined. Eliminating x, y, z from (2) and (3),

$$\begin{vmatrix} 0 & c & b & \lambda \\ c & 0 & a & \lambda \\ b & a & 0 & \lambda \\ 1 & 1 & 1 & l \end{vmatrix} = 0.$$

Whence $\lambda = 2abcl/(2\Sigma bc-\Sigma a^2)$.

Again, multiplying the equations (3) successively by x, y, z and adding $2\Sigma ayz-\lambda(x+y+z) = 0$; therefore

$$2\Sigma ayz = \lambda l = 2abcl^2/[2\Sigma bc-\Sigma a^2];$$

therefore $$2S = abl^2\sin C/(2\Sigma bc-\Sigma a^2),$$

which gives the maximum sum.

From the Fig.: $DG^2 = x^2+y^2+2xy\cos C$,

$$FK^2 = y^2+z^2+2yz\cos A,\quad HE^2 = z^2+x^2+2zx\cos B.$$

Let $w = x^2+y^2+z^2+xy\cos C+yz\cos A+zx\cos B$.

Also $l = x+y+z$. Proceeding, as before,

$$(2x+y\cos C+z\cos B)\,dx+(2y+z\cos A+x\cos C)\,dy$$
$$+(2z+x\cos B+y\cos A)\,dz = 0,$$

and $$dx+dy+dz = 0.$$

Hence, if μ is undetermined,

$$\begin{vmatrix} 2 & \cos C & \cos B & \mu \\ \cos C & 2 & \cos A & \mu \\ \cos B & \cos A & 2 & \mu \\ 1 & 1 & 1 & l \end{vmatrix} = 0;$$

therefore

$$\mu[\Sigma\sin^2 A+2\Sigma\cos B\cos C-4\Sigma\cos A+9] = 6l(1+\cos A\cos B\cos C).$$

Again, from the equations

$$2x+y\cos C+z\cos B = \mu,\quad x\cos C+2y+z\cos A = \mu,$$
$$x\cos B+y\cos A+2z = \mu,$$

by multiplying each by x, y, z successively, and adding

$$2\Sigma x^2+2\Sigma yz\cos A = \mu(x+y+z);$$

therefore $$2w = \mu l = \frac{l^2(1+\cos A\cos B\cos C)}{\Sigma\sin^2 A+2\Sigma\cos B\cos C-4\Sigma\cos A+9},$$

which is the maximum sum.

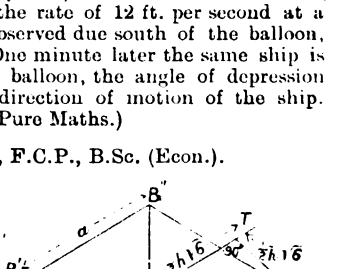
16585. (*Communicated by* "François.")—From a balloon which is travelling horizontally eastward at the rate of 12 ft. per second at a vertical height of 500 ft., a ship is observed due south of the balloon, the angle of depression being 45°. One minute later the same ship is observed to be due south-east of the balloon, the angle of depression being 30°. Find the velocity and direction of motion of the ship. (Univ. of London, B.Sc. Ex., 1908, Pure Maths.)

Solution by B. C. Wallis, F.C.P., B.Sc. (Econ.).

a = distance balloon travelled in 1 min., *i.e.*, 720 ft.;

h = height of balloon, *i.e.*, 500 ft.;

s = distance ship travelled in 1 min.



$$S = [(a+\tfrac{1}{2}h\sqrt6)^2+(\tfrac{1}{2}h\sqrt6-h)^2]^{\frac12}$$
$$= [a^2+4h^2+h\sqrt6\,(a-h)]^{\frac12}$$
$$= [720^2+4(500)^2+500.220.\sqrt6]^{\frac12}$$
$$= 10[5184+10000+1100\sqrt6]^{\frac12} = 1337 \text{ ft. (approx.)}.$$

φ = excess of angle at S' over 90°.

$$\tan\varphi = \frac{\frac{1}{2}h\sqrt6-h}{a+\frac{1}{2}h\sqrt6} = \frac{h\times\cdot225}{a+\frac{1}{2}h\sqrt6} = \frac{500\times\cdot225}{720+500.\frac12\sqrt6} = \frac{\cdot225}{1\cdot44+1\cdot225}$$
$$= \frac{225}{2665} = \cdot0844;$$

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therefore $\phi = 5°$ approx.

Velocity = 1337 ft. per min. = 15·2 m. p. h. approx.

Direction, approx. 5° to the South of East.

16610. (Saradakanta Ganguli, M.A.)—TP, TQ are tangents to a given ellipse. If the area of the triangle TPQ be constant, find the locus of T.

Solution by J. Macmillan, M.A.

Project the ellipse into a circle. As tangents project into tangents and the ratio of areas is unaltered by projection, the triangle TPQ has the same ratio to its projection *tpq* as the ellipse has to the circle. But the locus of t is evidently a circle concentric with the circle got by projection; therefore the locus of T is an ellipse concentric with the given ellipse.

16589. (Professor E. Hernández.)—On donne la suite des nombres 1, 2, 5, 12, 29, ..., dont $u_n = 2u_{n-1} + u_{n-2}$, est la loi de formation. On aura: (1) Deux termes consécutifs et au plus trois, auront toujours le même nombre de chiffres. (2) La somme des $n-2$ premiers termes augmentée de la somme des $n-1$ premiers termes plus 1, est égal au terme de rang n. (3) Le carré d'un terme de la suite est égal au produit augmenté ou diminué de 1, du terme qui précède par celui qui suit. (4) Le terme u_{2p+1} est égal à la somme des carrés des termes consécutifs u_{p-1} et u_p. (5) Si des restes obtenues dans la recherche du plus grand commun diviseur de a et b, par la méthode abrégée, c'est à dire, en faisant toujours que chaque reste soit plus petit que la moitié du diviseur, on en trouve deux consécutifs, compris entre u_{n+1} et u_n, on n'en trouve point entre u_{n-1} et u_n. (6) Dans la recherche du plus grand commun diviseur de a et b, par la méthode abrégée, on aura à effectuer un nombre de divisions au plus égal à trois fois le nombre de chiffres du plus petit des nombres donnés.

Solution by the Proposer.

(1) On a $u_{n+1} = 2u_n + u_{n-1}$, $u_{n+2} = 5u_n + 2u_{n-1}$,
$u_{n+3} = 12u_n + 5u_{n-1}$, $u_{n+4} = 29u_n + 12u_{n-1}$.

Mais si u_n est le plus grand terme de la suite inférieur à 10^n, on aura

$$u_{n-1} < 10^n, \quad u_n < 10^n, \quad u_{n+1} < 10^{n+1},$$
$$u_{n+2} < 10^{n+1}, \quad u_{n+3} < 17.10^n \lessgtr 10^{n+1}.$$

Or, on a $u_{n+4} = 10u_{n+1} + 9u_n + 2u_{n-1} > 10^{n+1}$.

(2) On déduit aisément cette propriété, en ajoutant membre à membre, les égalités

$$\begin{aligned} u_n &= 2u_{n-1} + u_{n-2}, \\ u_{n-1} &= 2u_{n-2} + u_{n-3}, \\ \cdots &\quad \cdots \quad \cdots \quad \cdots \\ u_4 &= 2u_3 + u_2, \\ u_3 &= 2u_2 + u_1. \end{aligned}$$

(3) De $u_n = 2u_{n-1} + u_{n-2}$ et $u_{n+1} = 2u_n + u_{n-1}$,
on déduit aisément $u_n^2 = u_{n-1}u_{n+1} - (u_{n-1}^2 - u_n u_{n-2})$.

(4) On déduit aisément des égalités établies dans (1) que
$u_{p+n+1} = u_n u_p + u_{n-1}u_{p-1}$, d'où pour $n = p$, $u_{2p+1} = u_p^2 + u_{p-1}^2$.

(5) Soit r_{k-1}, r_k, r_{k+1}, trois restes consécutifs du p, g.c.d. de a et b. Si r_{k-1} et r_k, tombent entre u_n et u_{n+1}, on aura $r_{k+1} < u_{n-1}$; car de
$r_{k+1} = r_{k+1} - g_{k-1}r_k$ et $r_{k-1} < 2u_n + u_{n-1}$, et $r_k > u_n$,
on déduit $r_{k+1} < u_{n-1} - (g_{k-1} - 2)u^n$ et g_{k-1} étant au plus égal à 2 on a $r_{k+1} < u_n$.

(6) Soit $a > b$ et $b < 10^n$.

Il n'y a pas (1) entre deux termes de la suite (i.) 1, 10, 10^2, 10^3, ..., plus de trois termes consécutifs de (ii.) 1, 2, 5, 12, 29, ..., et entre ces trois termes il ne peut avoir (5) que deux restes du p, g.c.d. Il resulte que dans les n intervales de 1 à 10^n de (i.), il y aura au plus $3n$ termes consécutifs de (ii.) qui donnent $3n-1$ intervales.

16609. (W. J. Greenstreet, M.A.)—Find geometrically the locus of the centres of ellipses with the same focus, and touching a given line, and passing through a given point.

Solution by R. F. Davis, M.A.

Let Σ be the image of the given focus S in the given tangent; P, the given point; and H, the other focus. Then

$$SP + HP = \text{major axis} = \Sigma H;$$

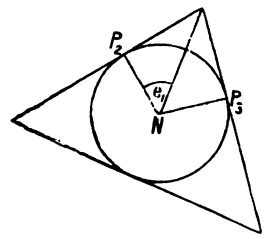
therefore $\Sigma H - HP$ is constant; and the locus of H is a hyperbola having Σ, P for its foci. Since $SC = \frac{1}{2}SH$, the locus of C is also a hyperbola.

16600. (W. Gallatly, M.A.)—If $A + B + C = 180°$; prove that
$(\sin B + \sin C)(1 + 2\cos B)(1 + 2\cos C) + \ldots$
$= 4(\sin B + \sin C)(\sin C + \sin A)(\sin A + \sin B)$.

Solution by the Proposer.

P_1, P_2, P_3 being the Feuerbach points where the nine-point circle is touched by the ex-circles, it is known that

$$\tan \tfrac{1}{2}P_2NP_3 = \frac{2(\sin B + \sin C)}{1 + 2\cos A}.$$



But $\theta_1 + \theta_2 + \theta_3 = \pi$;

therefore

$$\tan\theta_1 + \tan\theta_2 + \tan\theta_3 = \tan\theta_1 \tan\theta_2 \tan\theta_3;$$

and therefore, &c.

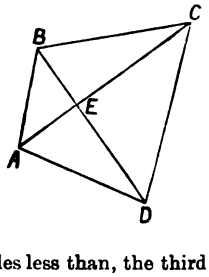
Or thus—

$$\begin{aligned} &(\sin B + \sin C)(1 + 2\cos B)(1 + 2\cos C) \\ &= (\sin B + \sin C) + (\sin 2B + \sin 2C) + 2\sin A \\ &\qquad + 4\sin B \cos B \cos C \cdot 4 \sin C \cos B \cos C, \\ S &= 4\Sigma \sin A + 2\Sigma \sin 2A + 4(\sin A + \sin B + \sin C)(\cos B \cos C + \ldots) \\ &\qquad - 4(\sin A \cos B \cos C + \ldots) \\ &= 4\Sigma \sin A + 2\Sigma \sin 2A + 4\Sigma \sin A \left\{\tfrac{1}{2}[\cos(B-C) - \cos A]\right\} + \ldots \\ &\qquad - 4 \sin A \sin B \sin C \\ &= 4\Sigma \sin A + 2\Sigma \sin 2A + 2\Sigma \sin A \,.\, \Sigma \cos \tfrac{1}{2}(B-C) \\ &\qquad - 2\Sigma \sin A (4 \sin \tfrac{1}{2}A \sin \tfrac{1}{2}B \sin \tfrac{1}{2}C + 1) - 4 \sin A \sin B \sin C \\ &= 32 \cos \tfrac{1}{2}A \ldots \text{ or } 32 \cos \tfrac{1}{2}(B-C) \ldots \\ &= 4(\sin B + \sin C)(\sin C + \sin A)(\sin A + \sin B). \end{aligned}$$

16580. (R. Gardner.)—Given the length of each side of a quadrilateral, and that the diagonals are perpendicular, find the lengths of the diagonals.

Solution by T. K. Venkataraman, M.A.

The lengths of the diagonals are indeterminate under the given conditions. This can be proved as follows.



Let the sides be a, b, c, d in order. Then

$$b^2 - a^2 = CE^2 - EA^2 = c^2 - d^2;$$

therefore $b^2 - a^2 = c^2 - d^2$ is a necessary relation among the sides, if the diagonals are at right angles .....(1).

Now, with a, b and any length x (AC in the Fig.) as sides describe a triangle. Here x lies between $b-a$ and $b+a$, for the sum of two sides is greater than, and the difference of two sides less than, the third side. x is otherwise indeterminate.

From B draw BE perpendicular to AC, and, with A as centre and radius = d, draw a circle cutting BE at D. Join CD. It can be shown from condition (1), by Euc. I. 47, that $CD = c$; therefore the diagonal of a quadrilateral under the given conditions lies between the difference and the sum of the two sides on either side of it, but is otherwise indeterminate.

QUESTIONS FOR SOLUTION.

16640. (Professor Sanjána, M.A.)—Prove that

$$\frac{1}{n^2} = \frac{1}{n(n+1)} + \frac{1!}{n(n+1)(n+2)} + \frac{2!}{n(n+1)(n+2)(n+3)} + \frac{3!}{n(n+1)(n+2)(n+3)(n+4)} + \ldots \text{ ad inf.}$$

From this formula (due to Stirling) show that

$$\Sigma_\infty^{n+1} 1/r^2 = 1/n - 1/2n^2 + B_1/n^3 - B_3/n^5 + B_5/n^7 - B_7/n^9 + \ldots,$$

where B_1, B_3, B_5, ..., are the numbers of Bernoulli. Examine if this series (which is divergent) can be employed in the arithmetical calculation of Σr^{-2}.

16641. (T. Muir, LL.D.)—If $|\alpha\beta'\gamma''|$ be an orthogonant, prove that

$$\begin{aligned} &(\alpha+\beta+\gamma)(\alpha'+\beta'+\gamma')(\alpha''+\beta''+\gamma'') - 2(\alpha\beta\gamma + \alpha'\beta'\gamma' + \alpha''\beta''\gamma'') \\ &= (\alpha+\alpha'+\alpha'')(\beta+\beta'+\beta'')(\gamma+\gamma'+\gamma'') - 2(\alpha\alpha'\alpha'' + \beta\beta'\beta'' + \gamma\gamma'\gamma''). \end{aligned}$$

16642. (G. H. Hardy, M.A.)—A. and B. are partners at whist, the latter being dealer. A. takes up his hand and finds he holds the ace of spades and no other ace. (i.) B, without turning up the last card, takes up his hand and after inspecting it remarks "I hold an ace." (ii.) On its being pointed out to B. that his conduct is irregular, he replies "All right, the ace I referred to was the turn-up," and places it on the table face downwards. (iii.) B. turns up the card, which

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proves to be the ace of clubs. What are the chances, for A., at the end of stages (i.), (ii.), and (iii.) respectively, that he and his partner hold at least three aces between them? Is there any difference between these chances, and if so, why?

16643. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show that, if

$$N_r = x_r^4 + 4y_r^4 = L_r M_r, \quad \text{where} \quad x_r^2 - 2y_r^2 = (\bar{1})^r;$$

then $M_{r-1} = y_{2r-1} = L_r$, and $M_r = y_{2r+1} = L_{r+1}$.

Ex.—Factorise into prime factors N_{16} (this contains 24 figures).

16644. (T. STUART, D.Sc.)—Is there any criterion by which we can determine whether the equations $\pm N = x_1^4 - 2y_1^2 = x_2^2 - 2y_2^4$ are soluble or insoluble in integers, N being a number of the form ± 1, mod 8? Exhibit your method by applying it to the numbers 281 and 241.

16645. (Professor E. B. ESCOTT.)—Solve completely by quadratics

$$x^2 - 2 = y, \quad y^2 - 2 = z, \quad z^2 - 2 = w, \quad w^2 - 2 = x.$$

16646. (Professor R. W. GENESE, M.A.)—Prove that the equation $\cosh x = x$ has no real root; and find the least value of m, to three places of decimals, for which the equation $\cosh x = mx$ has a real root.

16647. (Professor NANSON.)—Eliminate α, β, γ from

$$a\cos\alpha + b\cos\beta + c\cos\gamma = p, \quad a\sin\alpha + b\sin\beta + c\sin\gamma = q,$$
$$bc\sin(\beta-\gamma) + ca\sin(\gamma-\alpha) + ab\sin(\alpha-\beta) = 0, \quad \alpha+\beta+\gamma = 0.$$

16648. (M. T. NARANIENGAR, M.A.)—If the tangents at P, Q, R of a cardioide are parallel, show that (i.) $\Sigma(SP^2)$ = constant, (ii.) the centre of gravity of PQR lies on the axis of the cardioide and is fixed, (iii.) $(PQ^2 + QR^2 + RP^2)$ is constant.

16649. (SONTI V. RAMANUNTY.)—If a closed curve without singularities is symmetrical about each of two oblique axes, what restrictions are there on the nature of the curve or the inclination of the axes?

16650. (PULINBIHARI DAS, M.A.)—If A, B, and C be the vertices of a triangle inscribed in the circle $x^2 + y^2 = (a+b)^2$ and circumscribed about the ellipse $x^2/a^2 + y^2/b^2 = 1$, then the inverse arcs with respect to A, B, and C of an arc of the curve $[x^2 + y^2 + (a+b)^2]^2 = 4(a^2x^2 + b^2y^2)$ are connected by a linear relation.

16651. (A. M. NESBITT, M.A.)—Two conics S, S′, touch at A, and any line through A cuts them in P, P′. Find the locus of the intersection of the polar of P (as regards S′) with the polar of P′ (as regards S). In the particular case of two hyperbolas $1/x + 1/y = 1/l$ and $1/x + 1/y = 1/l'$, show that, if l and l' themselves vary in accordance with a certain relation, the locus is unchanged; and trace it.

16652. (H. L. TRACHTENBERG, B.A.)—S is a conic, and A, B two points. If P_1, P_2, P_3, P_4 are the four points whose joins with A and B are bisected by S, prove that A, B, P_1, P_2, P_3, P_4 will lie on a conic, provided that A, B lie on a conic coaxial with and similar to S.

16653. (W. F. BEARD, M.A.)—A conic circumscribed about a triangle passes through its centroid. Show that the triangle formed by joining the mid-points of the sides is self-conjugate to the conic.

16654. (Professor NEUBERG.)—En un point quelconque M de la surface $xyz = m^3$ on mène la normale qui rencontre les plans yz, zx, xy aux points A, B, C. (1) Démontrer que les segments MA, MB, MC sont entre eux comme les carrés des coordonnées de M. (2) Trouver l'équation du cône décrit par une droite passant par l'origine et parallèle à MA lorsque M se meut dans un plan parallèle au plan yz. (3) Au point C on mène la droite CM′ perpendiculaire au plan xy et égale à CM; trouver l'équation de la courbe décrite par M′ lorsque M se meut dans un plan passant par Oz.

16655. (D. BIDDLE.)—Given a regular n-gon ($n = 2m+1$), and a straight line in the same plane, (1) bisect the n-gon by a line parallel to the given line; (2) find the maximum distance of such bisectors from the centre of the n-gon, in terms of n and the circum-radius.

16656. (F. G. W. BROWN, B.Sc.)—Calculate the lengths of the sides of a triangle ABC, having given the semi-perimeter s, the area Δ, and the distance between the centres of the in- and the circum-circles, d. Show that, if $d^2 = \Delta(1 - a/s)$, the triangle is right-angled isosceles, a being the hypotenuse.

16657. (Professor V. RAMASWAMI AIYAR, M.A.)—P and Q are any pair of isogonal conjugates with respect to a triangle ABC. If AQ cut the circum-circle in O, and OP cut BC in R, show that QR is parallel to AP.

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10862. (J. J. WALKER, F.R.S.)—Find at what points on an ellipsoid the product of the reciprocal of the square of the semi-diameter into the difference of the squares of the reciprocals of the perpendicular from centre on tangent plane and of that semi-diameter is a maximum.

11209. (Professor FRANZ ROGEL.)—Find an independent expression for the n-th differential coefficient, for the value $x = 0$, of the complex function $y = [lg(2lg\sec ax/a^2x^2)]^p$.

11352. (G. S. CARR, M.A.)—If a watch spring, normally straight, be made circular by soldering together the ends, and then compressed at the extremities of a diameter AA′ by forces P, P′, the length of the transverse diameter BB′ thus becoming $2b$, show that the curvatures at A and B respectively (putting E for the elasticity) will be

$$(Pb/2E) \mp 1/b.$$

11390. (W. J. GREENSTREET, M.A.)—Find the area of a triangle in terms of the distances of its vertices from those of a given triangle.

11474. (D. EDWARDES, B.A.)—Each vertex of a tetrahedron is joined to the in-centre of the opposite face. Prove that these lines are generators of the hyperboloid

$$(l'yz + lxw)(mm' - nn') + (m'zx + myw)(nn' - ll') + (n'xy + nzw)(ll' - mm') = 0,$$

where (l, l'), ... are the sines of the angles between the planes (yz), (xw), ...

11580. (Professor SYLVESTER.)—Prove that the norm of the 8-valued function $1 + [f + (f^2-1)^{\frac{1}{2}}]\,[g + (g^2-1)^{\frac{1}{2}}]\,[h + (h^2-1)^{\frac{1}{2}}]$ is sixteen times the square of the discriminant of $x^2 + y^2 + z^2 + 2fyz + 2gzx + 2hxy$.

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Thursday, April 22nd, 1909.—Sir W. D. Niven, President, in the Chair.

The following papers were communicated:—

"The Principles of the general Theory of Integral Functions," Mr. F. Tavani.

"The Equations of Electrodynamics and the Null Influence of the Earth's Motion on Optical and Electrical Phenomena," Mr. H. R. Hassé.

"The Solution of a certain Transcendental Equation," Mr. G. N. Watson.

"The Physical Applications of certain Conformal Transformations of a Space of Four Dimensions and the Representation of a Space Time Point by means of a Sphere," Mr. H. Bateman.

"Some Criteria for the Residues of Eighth and other Powers," Mr. A. E. Western.

"On the Discontinuities of a Function of one or more Real Variables," Dr. W. H. Young.

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Practical Examination for Certificates of Ability to Teach.—The next Practical Examination will be held in October, 1909.

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THE Board of Education, following the lead of the Scotch Education Department (and it could not, in the matter of secondary schools and of training, have a safer guide), has of late years issued several Circulars dealing with special branches of instruction and offering directions, suggestions, and counsels of perfection to school authorities and to the respective teachers of these subjects. Even a comparatively unimportant matter such as the pronunciation of Latin was not thought unworthy of the Board's attention, and a reform, with which the Head Masters' Conference had trifled for the last twenty years and more, and which was being slowly effected by the Classical Association, has been carried and enforced by a ukase from Whitehall. We may safely prophesy that a similar effect will be produced by the Circular on the teaching of geometry, which was discussed in our leader of last month, and that in future histories of English education 1909 will be the date assigned for the deposition and banishment of Euclid.

It was therefore with keen interest and an anticipation of benefits to come that we received Circular 705—a Memorandum on Language Teaching in State-aided Secondary Schools in England. A prefatory note informs us that the Memorandum was prepared as an answer to a motion in the House of Lords, early in 1908, asking for a return of the hours devoted to Latin, French, German, and Spanish in grant-earning secondary schools during the years 1903–4 and 1906–7 respectively. Clearly the object of the motion was to ascertain the present position of modern languages in schools—whether they are beginning to be taken seriously, or whether they are still an obol thrown to Belisarius, the ancient solitary monarch of Classics. Such was the genesis of the Memorandum, and, if there were any doubt that by "language teaching" the Board intend the teaching of modern languages, it is dispelled by the fact that the concluding and longest paragraph of the Memorandum is an answer to a memorial addressed to the Board last year by the Modern Language Association and similar educational bodies on the increasing neglect of the study of German in schools.

To this paragraph we shall return; but first we must express our profound disappointment and dissatisfaction with the Circular as a whole. We asked for bread and we are given a stone, or, to use a more appropriate metaphor, on the strength of former Circulars we looked for grapes and are offered thistles. The whole Memorandum is an apology—a *non possumus*, a defence of the *status quo*, a plea for the Board's inaction, its policy (if such it can be called) of drift.

More than half of the eight pages is ancient history. It recounts at length how the State first concerned itself with higher education; how the Board, as the successor of the Science and Art Department at South Kensington, began to regulate the curriculum of secondary schools; how its control over the science side gradually extended to the literary side; and how it now holds an equal scale between the two branches of learning, though not, as appears later, between the ancients and the moderns. This is all very interesting, but, as Talleyrand remarked to a long-winded petitioner, "Monsieur, passons au déluge." Even when we do come to languages we find nothing but negations. The Board has not the materials to supply the return asked for by the House of Lords, and such statistics as they could supply would be misleading. Doubtless a full investigation of the present state of language teaching in schools would be of value, but this is not the time to make it. The Board has at present other and heavier fish to fry. It has, first, to settle the organization and supply of secondary schools, and even when it has finished that task the more difficult and fundamental question of an investigation into the teaching of English has a prior claim. Modern languages must be content to take a back seat.

At this point, we confess, we begin to lose patience. Really, the Board protests too much. Has it not a Department of Special Inquiries and Reports? Are not the two chief officers of that department both specialists in modern languages? Could not Dr. Heath and Mr. Twentyman, between them, if they were instructed by Mr. Runciman, produce a full and authoritative report on the position and methods of modern language teaching in England—at least as informing as the Special Reports on Modern Language

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Teaching on the Continent, prepared under the direction of Prof. Sadler? We are confident that neither of these gentlemen, nor the other two modern language specialists that the Board has on its staff (Mr. F. Spencer and Dr. Edwards), had a finger in drafting this so-called Memorandum on Language Teaching.

We come at last to the paragraph on German. The memorialists proved by statistics that the study of German in English schools, never general, is rapidly declining, and they petitioned the Board by means of a Circular, as in the case of Latin pronunciation and in other ways that are indicated, to use their influence and authority to stimulate the study.

The answer of the Board is, first, to depreciate and explain away the significance of the figures in evidence, as if, forsooth, there could be any doubt about the main fact alleged —that German is at a discount. Secondly, the suggestion that the Board should encourage and foster schools of the type of the German *Realschule* and *Oberrealschule*, in which two modern languages, but not Latin, are taught, is ignored and indirectly negatived. "The Board have seen no reason to depart from the traditional view that, without a knowledge of Latin, a scholarly study of modern literature, history, or philosophy is impossible." And, in this view, the Board shelter themselves behind the broad ægis of the Universities, regardless of the fact that not 5 per cent. of the pupils in State-aided schools (1 per cent. would be nearer the mark) proceed to the Universities. Might it not, with more truth, be asserted that, "without a knowledge of German a scholarly study of modern literature, history, philosophy," and, we may add, "of theology, medicine, and science, is impossible"?

A revolution in the methods and practice of modern language teaching has taken place and is still in progress, even more fundamental and far spreading than the revolution in the teaching of geometry. We have been encouraged in the latter case to look to authority for guidance and direction, and we have not been disappointed. In the case of modern languages, instead of just criticism and sage counsel, we are offered by the Board, through its Classical advisers, a dry-as-dust history and a lame apology for inaction and the maintenance of the Classical prerogative.

NOTES.

Is Oxford going to reform itself? An opportunity was furnished by the Government on the debate raised by the Bishop of Birmingham in the House of Lords nearly two years ago, when he asked for a Royal Commission of inquiry into the two ancient Universities and their constituent colleges with a view to the best service of the community. Lord Crewe, speaking for the Government, then said that "it was important for them to know, before arriving at a final conclusion, what the most thoughtful and competent opinion at both Universities really demanded, and also what the latter could not do of their own motion, and for what purposes legislation would be required on the recommendation of a Commission, and also whether there did exist at the Universities anything like a dead weight of obstruction against reforms, which could only be removed by statute." Utilizing the respite, Lord Curzon of Kedleston, the Chancellor, with his constitutional energy, set about gathering and co-ordinating the views prevalent in the University and among Oxford men outside of it. All this information he has summarized and commented upon in a substantial Memorandum entitled "Principles and Methods of University Reform," which Mr. Frowde has published in a half-crown volume. He is "convinced that there exists, both among the resident and non-resident members of Oxford University, a powerful and consentient feeling in favour of certain changes, and that the moment is singularly favourable for carrying them into execution." Oxford is not "the home of stationary forces or ideas: on the contrary, the spirit of reform is probably even more active inside the walls of the University than it is among the vast and scattered constituency of non-resident Oxford men." But, even if we substitute "certainly" for "probably," the argument seems to miss the point: we want to know the strength and the direction of the driving forces, whether internal or external. Anyhow, the thing is "to establish contact and to create harmony between the most enlightened opinion within and without." And when Lord Curzon succeeds in this enterprise the world will see what Oxford can do without direct external pressure to make itself "the focus of the best educational activities, the highest civic aspirations, and the most advanced thought of the age and the race."

The points upon which Lord Curzon concentrates attention as admitting of reform relate to the Government, the Endowments, the Teaching, and the Internal Administration of the University, including the admission of poorer men (both of the professional and the working classes), the difficult question of the finances both of the University and of the Colleges, compulsory Greek and examinations generally, facilities for advanced study and research, and a variety of miscellaneous matters of importance, such as degrees and academic votes for women. Lord Curzon's own criticisms and suggestions are expressly restrained: "I have refrained." he says, "from expressing strong personal opinions, regarding it as my privilege rather to place before the University the evidence which I have collected and examined on the main issues of academic reform, and to invite the consideration of the Hebdomadal Council to so many of these subjects as they may think it advisable to pursue." Already, it appears likely that the Council will discuss freely the whole range of the subjects thus proposed, and we shall presently see the tendency of University opinion, and be in a position to form a judgment as to its adequacy. There can be no doubt whatever that "Oxford, ever since the last Commission, has been, and still is, engaged in reforming itself, and that the steps here suggested are but the logical continuation of a process that is in course of development from day to day." But the point is the rate of development. Outside the University educational progress has been highly accelerated, and social movements have been increasingly active; and, although the University and the Colleges have had greater freedom to make administrative and even constitutional changes during the past generation, the question is whether they have adequately exercised such freedom,

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and whether the "due checks" may not be advantageously relaxed. In any case, Lord Curzon has stirred the waters, and his comprehensive review of points of reform, together with the resulting action of the University Authorities, cannot but give an immense impulse towards the improvement of the existing conditions.

A FEW points of detail may be noted. Lord Curzon would reform Congregation, which consists of a fortuitous concourse of persons qualified by residence for twenty weeks of the year within a mile and a half of Carfax, into a representative assemblage of the teachers of the University—as the Commissioners of 1850, Lord John Russell, and Mr. Gladstone all wanted to do. As to Convocation, he states four different schemes of reform, without essaying to decide between them; only something must be done. The admission of poor men is very fully treated: "My own idea," says Lord Curzon, "is that instead of, or in addition to, utilizing the existing machinery of the Collegiate and Non-Collegiate systems, we should found at Oxford a University Working Men's College, not confined to artisans alone, but embracing—according to its size and capabilities—the members of all those classes who are too poor, even with financial assistance, to enter the ordinary Colleges, or to spend half the year in vacations"; the cost to be "if possible not more than £60 per annum," with a large number of maintenance scholarships or exhibitions, "which I would appeal to the richer Colleges to contribute." Yes; stereotype class distinction, and that, too, at a stiff price. Does not this question go to the root of the matter? Is there no suggestion in Scotland, Ireland, Germany, France, America—anywhere else? Lord Curzon finds the number of classical scholarships excessive, and would evidently support a drastic reorganization of the whole scholarship and fellowship system. He would substitute some literary equivalent for Greek in Responsions, though he would rather abolish Responsions altogether. The teaching and financial arrangements are too complicated for notice here. As regards a policy of Research, "the real need at Oxford is not more advanced teachers, but more advanced students," so that "the efforts of the University should be directed primarily, by the encouragement that it gives and the rewards that it offers, to attracting the men." This is true, we think, for Oxford, though not for all other places of learning. Lord Curzon would grant degrees to women, but he is "not in sympathy with the proposal that women should become members of Convocation, or of Congregation, or should sit upon the governing bodies of the University." On the whole, indeed, unless the University can take considerable steps in several directions beyond the cautious advances of Lord Curzon, Oxford, we suspect, will require external assistance in making such reforms as will satisfy the expectations of the public.

CAMBRIDGE, which has also been disturbed by agitations for reform, appears to be concentrating on points of more or less general agreement. Thus, it is proposed to associate more closely with the direction of academic effort such graduates as are more intimately in touch with the actual work of the University. Again, the average graduate is to be induced to proceed M.A., so as to render the Senate more representative of the University than it can be said to be now. As for the scholastic work of the University, much improvement is anticipated from fuller representation of the teachers, more careful arrangement of the lectures and grading of the lecturers, greater co-operation of the colleges, and larger provision for University as opposed to college teaching. It is a nice point how to encourage the colleges to make voluntary contributions to the University, and it is thought that Fellows under no obligation to teach should be placed under obligation to undertake some definite work. The opinion seems to prevail that, "with the large sums given to assist students, a Cambridge education is accessible to any student, however poor, who has given evidence of ability." We should be glad to consider the facts on which this opinion is based. It is all very well to tell us that "the expenses of a careful undergraduate need not exceed £120 a year"—we have had experience to the contrary—"or £80 to £90 for a non-collegiate undergraduate," and that "the principle of fixed inclusive charges, whether in connexion with the hostel system or not, affords an effective means of reducing and regulating expenses." Consider all this—so far as it is tangible—in relation to the means of a poor man and the great national object of opening up a career to the boy with brains. So far the tendencies of reform at Cambridge and at Oxford seem to run in pretty similar grooves. But the reformers should try to realize what a "poor" student is, and to lift their eyes to be instructed by the treatment he gets at Universities elsewhere.

THE conference at Grosvenor House upon the importance of a scientific training for women in domestic economy, heralded as it was by a long article in the *Times*, ought to exercise no inconsiderable practical influence. The three years' University course established in the King's College Women's Department at Kensington, which was professedly more in the eye of the Conference than any other institution, will no doubt provide ample instruction for women that propose to engage in public service in one or other of the many forms requiring special knowledge of domestic methods, or in the management of considerable private establishments. "It is very unpleasant," an Honourable Lady is reported to have said, "to appear as a fool before the cook, and a great nuisance to be as putty in the hands of the plumber." The plumber is in any case a hopeless personage, and he comes and goes; but the cook is there every day. And probably the lady spoke feelingly, if frankly, for she is said to have avowed that "she was totally ignorant of all the principles of housekeeping." Well, some people can afford such ignorance, discreditable as it may be, and even humiliating. The real importance of the movement, apart from special training for public positions, lies in the probability that the idea of domestic training will filter down to the five million married women that must, the *Times* thinks likely, "be their own housekeepers." We are glad to be assured by our contemporary that "much has been already effected by reformers in primary schools and in the Polytechnic." We should be still

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more glad to recognize some evidence of the affirmation in the actual everyday domestic performances of the pupils that go into private kitchens or become "their own housekeepers." "The fullest results," says the *Times*, "can only be achieved if women enlist at every stage the sympathy and co-operation of men." But what of sympathy and co-operation when the woman can't cook a potato, and casts into the dusthole oddments that would serve a French or a Scots housewife to furnish a tasty meal?

SUMMARY OF THE MONTH.

An influential deputation waited upon Mr. Walter Runciman to urge that Local Education Authorities should be encouraged to provide, wherever practicable, for direct systematic and graduated moral teaching, and that training colleges should be required to provide instruction in the methods of imparting it. Dr. Clifford stated that it was impossible to exaggerate the gravity of the matter. It had to do with unemployment and the defence of the country. The greater part of the time devoted to education was occupied with the amassing of knowledge, and he urged that more time should be given to the education of the conscience and the heart. Mr. Runciman said the Board had been considering the whole question of the curriculum of the elementary schools, and the matter was still under consideration. He thought it best to state quite frankly that they must leave moral instruction in its present position in the code, without making it a compulsory subject. With regard to the subject of the teachers, they were considering the question of adding to the instruction in their training colleges. He would be sorry if moral instruction were to be treated as a thing by itself. The most fruitful field for the activities of the Moral Instruction League lay in the Local Authorities.

A report to the Education Committee of the London County Council the other day showed that the number of Junior County Scholarships awarded for 1909 was 1,649 (840 boys and 809 girls), as against 1,818 (779 boys and 1,039 girls) last year. The number of candidates was 23,860, as compared with 24,252 last year. The reply to Progressive criticisms was that the number of scholarships was fixed by the number of applicants, and there had been a steady decrease in the number of qualified candidates. A list of evening schools to be closed in order that the classes might be amalgamated with those of neighbouring schools was submitted by the Polytechnics and Evening Schools Sub-Committee. The recommendation was sent back to the Sub-Committee with a view to the preparation of a complete list.

Some idea of the result likely to follow from the step taken last autumn by the University of Oxford with the object of providing higher education for the manual working classes is now obtainable. The first twelve weeks' work of the eight tutorial classes organized by the Committee of the University Extension Delegacy has been completed with success. The committee consisted of the Dean of Christ Church, Mr. David Shackleton, M.P., Mr. C. W. Bowerman, M.P., together with several other representatives of Oxford University and of Labour, and the classes were held at Chesterfield, Glossop, Littleborough, Longton, Oldham, Rochdale, Swindon, and Wrexham. The subjects studied were industrial history and economics. Out of 169 students 48 were engineers, 35 were engaged in the textile industries, 17 belonged to the building trades, 12 were labourers, 10 were potters, 7 were engaged in the clothing trades, 5 were miners, 4 were printers, while a large number of industries were represented by one or two members. Sixty per cent. of the 234 students were under the age of thirty-four. The committee report that the students are keenly alive to questions of civic importance and desire to increase their knowledge.

A joint conference of representatives of workers' organizations and of the Victoria University of Manchester, on the subject of higher education for work-people, was held at the University (April 29), the Vice-Chancellor in the chair. Mr. D. J. Shackleton, M.P., spoke of the increasing desire among working men and women for higher education. The Universities would, he said, be neglecting their opportunities if they failed to respond to those desires. Experience of the working of the schemes already in existence had convinced him of their value and of the readiness of the Universities to help. It was resolved that the approval of the University be asked to a scheme which should provide for the establishment in Manchester and other towns of tutorial classes, and the promotion of the delivery of pioneer lectures and courses of extension lectures in industrial history, economics, and subjects cognate thereto, and other subjects of a liberal education, more particularly literature. The scheme should be worked by a joint committee consisting of seven representatives of workers' organizations and seven representatives of the University. The Vice-Chancellor of the University was nominated provisionally as chairman, and Mr. J. R. Clynes, M.P., vice-chairman. Mr. L. V. Gill, the secretary to the North-Western District of the Workers' Educational Association, and Mr. H. P. Turner, M.A., LL.B., secretary to the University Extension Committee, were nominated as joint secretaries. After the sanction of the University has been obtained, the Committee will meet to complete arrangements and draw up courses of study. It is intended to establish classes and courses at the beginning of the University session in October next.

At the Conference of Welsh members of Parliament with the representatives of the University of Wales, the Welsh University colleges, and the Education Authorities of Glamorgan and Monmouth, held at the House of Commons, it was decided (1) that the Welsh Parliamentary representatives be asked to petition the President of the Board of Education to have the powers of the Board over the training of teachers in Wales transferred to the Welsh department of the Board of Education, and (2) that the suggestions of Principal E. H. Griffiths, of Cardiff, as to a suitable scheme for the training of teachers in Glamorganshire and Monmouthshire be submitted to a conference representative of the education authorities of those counties and the University College of South Wales and Monmouthshire, and that a report of this conference be submitted to an adjourned meeting of the general conference to be convened later on.

A first meeting of the General Committee for the United Kingdom of the International Interchange of Students was held at University College, Gower Street, Prof. Poynting (Birmingham) in the chair. The meeting was called by the Provisional Committee, which has been working for some months to effect an interchange of undergraduates between Canada and the United States and the United Kingdom, for study of forms of government and industrial, social, and educational effort, rather than for purely academic work. In addition to fourteen travelling scholarships which it is hoped will be founded, a travelling bureau is to be opened in London and another in New York. These will provide information upon such problems as the student may wish to investigate, and will give introductions to the student traveller to leaders in the different spheres of life in the country which he visits. An Executive Committee has been elected as follows:—Vice-Chancellor Sir Charles Eliot, Sheffield; the Provost of University College, London; the Master of Downing College, Cambridge; Prof. J. H. Poynting, Birmingham; Mr. H. B. Hartley, Balliol, Oxford; Mr. A. E. Shipley, Christ's College, Cambridge; Mr. F. J. Wylie, Oxford; and Mr. H. W. Crees (Honorary Secretary).

At a Conference on "The Place of the Classics in Education," held by the King Alfred School Society at University College, Sir J. Cockburn said that formerly the classics contained the keys of all knowledge, but times had changed, and educationists should be very sensitive to change. Yet it would be a loss to civilization and to humanity if the high ideals of the classics were not kept up. The true spirit of Nature study was in the Greek language, but if it were taught too early the children hated it. Prof. Rippmann suggested that, in schools where the leaving age was sixteen, an hour a week should be given to the classics in the later years of school life, not for the study of grammar, but to make the ancient life and literature live again. The papers set by examiners, being pure memory work, were generally a disgrace. Mr. Harold Spender said there was no sterner drilling than the classics for a boy. We had too many half-baked scholars and not enough whole-baked craftsmen in this country, and education had no definite aim. Dr. Rouse thought that the classics had been more intelligently taught in the last two generations. Two hundred years ago Latin was not a dead language, but a living one, but in the eighteenth century it became very dead in England. Now classical teachers were taking a leaf from the book of the teachers of modern languages, and recognized that the

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simplest way was the most educational, and that the free use of the spoken language was the best plan.

University College School, Hampstead, gave three performances of the "Alcestis" of Euripides in an English translation by Mr. G. Warre Cornish. The setting, designed by Prof. Simpson, was something like that of the performances of Greek tragedies at the Court Theatre. Unlike those at Bradfield and at the performance of the "Medea" given some time ago in Greek by the Bedford College for Women, it included no thymele and no orchestra, but consisted merely of a raised platform, with the porch of a Greek palace flanked by hangings. The Chorus was largely reduced in importance—it numbered only two citizens of Pherae; there was no singing or dancing, and its speeches were considerably cut down. The aim of the production was not an antiquarian revival, but one under the conditions more serviceable—to exhibit with all the intensity of the stage the wonderful beauty of the story and to give forcible expression to the exquisite things which Euripides at that time had to say about love, sacrifice, and life. This aim, thanks to very intelligent acting, evidently very well coached, was fully attained. The dresses were from designs by Prof. Percy Gardner, and the school orchestra in a gallery over the stage played incidental music from Glück's "Alceste."

The Council of the Tonic Sol-fa College some few months ago sent a memorial to the Board of Education with the main object of preventing the compulsory use of the staff notation in infants' schools and in classes corresponding to the first three standards. In their reply the Board of Education express themselves as "glad to have the opportunity of removing some misconceptions," and make it clear that their "suggestions" are not to be regarded as "regulations," and that head teachers are free to introduce the staff notation in such part of their schools where they consider it can be wisely done.

The East Suffolk County Education Committee has carried out a series of experiments in disinfection. Forty schools were selected, equal as far as possible in size, character, and condition of building. In twenty of these schools the walls, furniture, and floors were sprayed daily with a liquid disinfectant; in the remaining twenty no operation other than washing the floors and furniture with hot water at the commencement of the experiment was carried out. During the period covered by the experiment, the percentage of absence caused by sickness in the disinfected schools was 4·65, and in the non-disinfected 5·5. For the seven months the increase of Government grant in the twenty disinfected schools was £31. 9s., equivalent to £54. 7s. for these schools for a whole year, and £452. 2s. for the whole county for the year. The cost of the disinfectant was £23. 6s. 6d. Some time back, it will be remembered, the Bucks Education Committee conducted similar experiments and reported similar results.

Dr. Wormell presented the prizes and certificates gained at the Christmas examination of the College of Preceptors at the Folkestone Centre. That function (he said) was associated particularly with one class of school—the private schools. The private schools had had to formulate the principles and methods by which the human intellect should be developed through education. Private schools were everything in the past, and he ventured to think there never was a time when they were more needed in England than they were now. The country would be in a very poor state in regard to real educational progress if it were not for the private schools. Therefore he was there to say from conviction, although he never was a private-school master—he had been head master for thirty years of a very large city school, but was out of it now—"Long live the private schools of England." The College of Preceptors was associated with private schools, because it originated sixty years ago by the efforts of private-school teachers. They determined to support this College, and a system of examinations of a curriculum that should be advanced and advancing; that should be very broad and yet not too broad; that should offer a very large variety of subjects, but should not require every candidate to take more than a certain group in that curriculum. It had proceeded on that plan, and he thought it was the right plan. It was advisable that every one should have a foundation of general education and that every one should be encouraged to develop those special powers of intellect with which the individual had been endowed. It was a bad thing to try to train all the people of the country the same way and make them all alike, think alike, and work alike. The men who succeeded were those who were not exactly like other men. The College of Preceptors did not oscillate this way and that way. It had always year by year improved and amended its curriculum, the aim always being the development of intelligence. A great deal of time and thought was given to the working out of the scheme. If the examiners overstepped the mark, went beyond the curriculum, or were not not quite clear, there was a body of very learned men called moderators who criticized and corrected. He mentioned those details to show them how careful the College was to meet the requirements of the time, and to show them how free it was from red tape.

The Rev. Canon Henry Holden, D.D., formerly Head Master of Uppingham and of Durham Schools, and editor of many scholarly editions of classical works, died at Boscobel, Streatham Common, S.W., at the age of ninety-four (March 30).

It is with deep regret that we record the death of the Rev. Charles H. T. Wood, M.A., late Head Master of Sherborne, and son of the Rev. Dr. Wood, of Harrow, at the age of forty.

The Very Rev. John Marshall Lang, D.D., LL.D., C.V.O., Principal of the University of Aberdeen, died (May 2) at the age of seventy-five. He was educated at the High School and the University of Glasgow, and spent the main part of his life in the service of the Church of Scotland, succeeding Dr. Norman Macleod in the Barony Church, Glasgow, and rising to be Moderator of the General Assembly in 1893. In 1900 he was appointed Principal of Aberdeen University, and, while he administered the office with great business capacity and tact, he specially distinguished himself on the occasion of the quatercentenary celebrations in 1906. His second son is the Archbishop of York.

UNIVERSITIES AND COLLEGES.

Oxford.

Elsewhere (Notes) we refer to Lord Curzon's Memorandum of proposed reforms.

At a meeting of the University Reform Association (May 16), Prof. Firth in the chair, the following resolutions were passed unanimously:—(1) "That the Association thanks the Chancellor for his letter to the University, and cordially accepts the general principles set forth in it as a basis for immediate action." (2) "That this Association supports the action of the Council in selecting the subjects mentioned in its resolutions as those upon which it recommends early and definite action."

Cambridge.

(*From our own Correspondent.*)

The *University Reporter* of May 4 contained an apparently unimportant notice by the Vice-Chancellor that he had received a memorial from certain members of the Senate. We were not surprised to receive shortly afterwards a copy of certain reports formulated by an unofficial Committee, giving their views on University reform as well as disquisitions on all the burning questions of the day. It is imagined that some prominent members of the University invited by circular all those whom they considered moderate men to join a representative committee to discuss certain questions. The result is that the moderate men have presented a moderate report.

Imprimis, the electoral roll is to be reorganized. Membership is to be restricted to those who have some definite qualification, such as University or College office. This body will practically regulate matters that are now dealt with by the Senate. An appeal is to lie from Congregation (as the new body is to be called) to the Senate, provided that a hundred members of the Senate favour such appeal. There are other provisions relating chiefly to matters of detail. Statutes may only be changed by the concurrence of Congregation and Senate, but changes in ordinances may be made by Congregation, subject to appeal to the Senate.

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The report states that it is desired to give to those engaged in teaching research and administration a larger share than they possess at present in the legislative action of the University. It seems to have escaped the notice of the Committee that a certain amount of teaching is done here by private coaches, who in some cases do, but in other cases do not, possess the necessary qualifications for the new body. There will, perhaps, be found some mode by which this rather numerous class may be officially recognized.

The part of the report which deals with the relation between the Colleges and the University is sure to provoke acrimonious discussion. Any change in existing arrangements must financially affect all who are officially engaged in Cambridge work. But, with all deference to the shade of the late Cecil Rhodes, Cambridge men are not altogether babes in finance, and the most difficult questions of all will yield to common sense and tact.

There is one underlying evil upon which the reports are discreetly silent. Perhaps the authors were conscious that the suppressed fact is common knowledge. Vast changes were made some years ago in the fellowship system. A life pension for a place in the Tripos—that idea has gone, and some Colleges, like Trinity, make it hard even for the best of their Fellows to continue after their seven years of probation. It seems bad politics that a professor who has served for a solid lifetime should be denied the privileges and pension of one who has performed the functions of bursar or lecturer for a stated term of years. In spite of the numerous fellowships filled every year, the teaching staff both of the Colleges and of the University contains the names of men who have not won prize fellowships. It is, perhaps, a fact that all Fellows of Colleges are not born teachers; but of this prime difficulty the reports say nothing.

An interesting feature of the report is a statement that a careful student can go through his University course at a cost of £120 per annum; medical students requiring about £140, and engineering students rather more than this. On the other hand, it is stated that £80 to £90 will enable a non-collegiate student to meet his Cambridge expenses for the academic year. "The Committee are of opinion that, with the large sums given to assist students, a Cambridge education is accessible to any student, however poor, who has given evidence of ability." These are brave words. We get our news from other sources than newspapers.

But the reports are, on the whole, worthy of the fullest consideration. It is clear that Cambridge means to reform itself from within, and thinks that mistakes are of two classes: omissions and commissions, whereof the latter are the deadliest.

Prof. Oppenheim was fortunate enough to be able to induce Prof. Wilson, of Harvard, to give us a second lecture on the subject of the International Naval Conference. Much that the Professor said was of the deepest interest, and much that he left unsaid was of supreme importance, when one considers that he represented at the Conference the great nation which refused to be a party to the Declaration of Paris. Prof. Wilson will always be welcome here, if only to strengthen the friendly relations between Harvard and Cambridge.

The valuable services of Dr. Haddon in the field of ethnology are to be recognized, though one cannot say adequately rewarded, by his being appointed Reader in Ethnology at a stipend of £200 per annum. We shall thus be able to compete with Oxford in giving a suitable training to our candidates for the Indian and Egyptian Services. The Colonial Office is insistent and the India Office sympathetic; Cambridge again will show its readiness to train men for the work of government beyond the seas.

The "General" Syndicate has published draft rules for carrying into effect the recent decision of the Senate allowing two Special examinations to take the place of the General and one Special, as the normal course for the Poll Degree. One regulation, though obviously well meant, may lead to curious results. It is that Part I. of any Special may be taken in or after the second term, Part II. in or after the fourth term, "provided that neither Part I. of two special examinations nor Part II. of two Special examinations may be taken in the same term." The idea seems to be that men should, as far as possible, clear off one subject before starting another. But this curious anomaly will arise. A man in his fourth term may take the second part of one Special and the first of another, a course which is surely more reprehensible than taking two first parts. Doubtless this omission will be rectified later on.

The Board of Agriculture intend changing the venue of their operations from Impington to Gravel Hill Farm, close to the Observatory. This will be a great convenience to the large and growing number of agricultural students.

The May week threatens to be more successful than ever. For most of the balls tickets were all sold out a month beforehand, and the programme of festivities is unusually long and attractive.

Prof. Sedgwick leaves us at the end of this term. What Cambridge loses London gains. A forceful man, who knows his business and does it, he leaves no enemies here, and goes to make fresh friends away from us. Mr. Duff, of Trinity, retires from his tutorship at the end of this term, to the deep regret of all his pupils. Rarely has any College officer won to such an extraordinary extent the respect and affection of his men. His successor is Mr. R. Vere Laurence, who will doubtless carry on the high traditions established by his predecessors, Dr. Verrall and Mr. Duff.

On the river there are strong rumours that Trinity Hall may yield pride of place to Jesus; but the Hall have a happy knack of getting together at the right moment. At any rate, the struggle between the three head boats—Hall, Jesus, and First Trinity—promises to be unusually interesting.

London. There was a brilliant assemblage on Presentation Day. The Principal's report showed that in the year 1908–9 there was an increase in the number of candidates for entry to the University, being 7,973 against 7,356 and 7,112 in the two preceding years. The number of candidates for the various examinations continued to show a marked increase under each heading, and amounted to 12,483, as against 11,591 last year. The total number of successful candidates was 5,764, the total number of those who obtained degrees being 880. The total number of internal students was now 3,925—an increase of nearly 10 per cent. on the figure for 1907–8, which itself was more than 8 per cent. higher than that for 1906–7.

Offices have now been definitely assigned to the Royal Commission on University Education in London, and all communications in reference thereto should in future be addressed to the Joint Secretaries, 12 Queen Anne's Gate, S.W.

After prolonged negotiations, the University has decided to recognize the certificates of the Joint Matriculation Board of the four Northern Universities, and to admit candidates who have passed the Board's examination to courses of study at London University, or to the higher examinations under certain well defined conditions. The London Matriculation Certificate will confer like privileges in regard to the other Universities.

Durham. The Newcastle-on-Tyne Education Committee have approved a scheme for co-ordination in technical evening instruction between the Rutherford College and Armstrong College. The main object of the scheme is to avoid over-lapping the classes at the two colleges and the consequent wasteful duplication of teachers and equipment, and the placing of the subjects of instruction in the best possible environment. The Higher Education Sub-Committee stated that it was desirable that the highest work should be focused at Armstrong College and the intermediate at Rutherford College. But in certain subjects it appeared that complete provision could have been made at Armstrong College and in others at Rutherford College. It was proposed that subjects of a technological character should be taken at Rutherford College, and that there should be a conference sitting frequently between the heads of departments at Armstrong College and the principal lecturers at Rutherford College, to be called the Joint Board of Studies. The City Council at its last meeting confirmed the Education Committee's recommendation to build a new wing to Rutherford College for technical instruction at a cost of £6,000.

Edinburgh. In the Annual Report by the Business Committee to the General Council it is shown that, of the ordinary graduating students in Arts of the first year, 94 are taking a five-subject curriculum, 35 six subjects, and 40 seven subjects. French is first with 49, followed by English with 40, and then come Mathematics, Latin, Natural Philosophy, Greek, German, Moral Philosophy, Chemistry. Considering the small number of subjects in which double courses have been authorized, the preponderance of five-subjects selection is very significant. In the report of the Finance Committee it is stated that there were 3,292 matriculated students

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for 1907–8 (of which 1,128 are in Arts, 64 in Divinity, and 1,487 in Medicine), as compared with 3,196 and 3,147 in the previous years. The Report shows the capital funds at £801,405, compared with £753,285 last year. The general revenue and expenditure account shows a revenue of £114,243 and an expenditure of £112,334, compared with £107,466 and £107,243. Referring to lectureships, the Report states that, with the addition of a Lectureship in Accounting and Commerce, and perhaps one in Banking, a degree in Commerce might be offered which would rival that of any other British University.

The University has decided to institute a full ordinary course in Scottish History, to be taken as a double course with British History. The course is to be constituted by the recognition of Prof. Hume Brown's present Honours Course in Ancient Scottish history, to be delivered during the autumn and spring terms, together with not less than twenty-five lectures on the later Scottish history to be delivered during the summer term by a lecturer appointed for the purpose.

THE EDUCATIONAL LADDER.

CAMBRIDGE: GIRTON COLLEGE.—Clothworkers' Scholarship, £60 for 3 years and an additional term: Miss M. K. Brandebourg, Portsmouth High School (French and German). Goldsmiths' Scholarship, £60: Miss I. Thwaites (Mathematics). College Scholarship, £50: Miss E. A. Parfitt, County School, Aberdare, and University College, Aberystwyth (Chemistry and Physics). Russell Gurney Scholarship, £40: Miss C. Selby, Sydenham High School (History). Pfeiffer Scholarship, £30: Miss K. M. J. M'Clure, North London Collegiate School (History). College Scholarship, £20: Miss H. V. Stuart (Classics). Goldsmiths' Scholarship, £40: Miss H. O'Brien, Notting Hill High School (French and German). Mary Anne Leighton Scholarship, £17. 12s.: Miss E. M. Elligott, Clapham High School (Physics and Chemistry). College Exhibitions, £15 each: Miss E. L. Barnard (Mathematics) and Miss E. B. Duff, St. Leonard's School, St. Andrews (Classics). The following attained the standard for Exhibitions: Miss A. Tregaskis, Clapham High School (Botany and Chemistry), Miss F. A. O. Cunningham (History), Miss G. N. L. R. Murray, Oxford High School (Mathematics), and Miss P. C. Inman, Blackheath High School (Mathematics).

CAMBRIDGE UNIVERSITY.—Stewart of Rannoch Scholarships—Hebrew (open): S. Brodetsky, Trinity, and A. Jephcott, Queens', equal. For the restricted scholarships there were no candidates. Greek and Latin: A. E. F. Wood, Trinity; G. S. Hellings, St. John's. Sacred Music (open): F. V. Haines, Clare. Adam Smith Prize: J. M Keynes, Fellow of King's. Adams Prize: G. A. Schott, B.A., Scholar of Trinity. Winchester Reading Prizes: (1) R. W. Pole, King's; (2) E. H. J. M. Dalton, King's, and W. H. Humphreys, B.A., Christ's, equal. Lightfoot Scholarship (History, especially Ecclesiastical): John W. Reynolds, B.A., Scholar of Trinity. Boden Sanskrit Scholarship: Edward H. Johnston, B.A., New College. Tyrwhitt Hebrew Scholarships: W. A. L. Elmslie, B.A. Christ's. and R. H. Willey, B.A., Caius, equal. Mason Prize for Biblical Hebrew: R. H. Willey, B.A., Caius. Le Bas Prize: Not awarded.

Christ's.—Skeat Prize: John Gordon Simpson.

St. John's.—Choral Studentships, £40 a year: Tenor, A. Guest-Williams and R. Stansfeld; Bass, H. M. Lloyd and R. M. Winder.

LONDON: ROYAL ACADEMY OF MUSIC AND ROYAL COLLEGE OF MUSIC: ASSOCIATED BOARD FOR LOCAL EXAMINATIONS IN MUSIC.—Advanced Grade: Gold Medal, Margaret Stoddart, Jersey Centre (Violin); Silver Medal, Helen M. Radcliffe, Bristol Centre (Violin). Intermediate Grade: Gold Medal, Gladys Daniel, London Centre (Violin); Silver Medals, Richard J. Millidge, London Centre (Harmony), Isa M. Meikle, Edinburgh Centre (Harmony), and Dorothy Thuell, Truro Centre (Violoncello).

LONDON UNIVERSITY.—
University College.—Quain Studentship in English: Gerald Gould, B.A., Fellow of the College.

OXFORD: SOMERVILLE COLLEGE.—D. M. Thorpe, Gilchrist Scholarship of £50 for three years: Margaret Tennant (Classics), Edinburgh University. Clothworkers' Scholarship of £50 for three years, Dorothy R. Smith (Mathematics), Leamington Municipal School and King's High School, Warwick. Students' Scholarship of £40 for three years, Elsie M. Elligott (Physics and Botany), Clapham High School. Conybeare Exhibition of £16. 13s. 4d. for three years, Madeleine Giles (Classics), North London Collegiate School. College Exhibitions of £25 for three years: Dorothy Thorpe (History), University College, Bristol; Dorothy Skinner (Latin and French), Conamur School, Sandgate; Elizabeth Whyte (English), Aberdeen University.

OXFORD UNIVERSITY.—Chancellor's Prizes: English Essay, H. A. Smith, B.A., late Scholar of St. John's; Latin Essay, not awarded; Latin Verse, John Noel Dark, Scholar of St. John's. Newdigate Prize (English Verse): Frank T. A. Ashton-Gwatkin, Commoner of Balliol.—Charles Oldham Prize: Stanley T. Collins, Scholar of Wadham. Ellerton Theological Essay Prize: Rev. Ernest F. Morison, B.A., late Scholar of Lincoln.—Gaisford Prizes: Greek Verse, Algernon E. A. F. Spencer, Scholar of Christ Church; *proxime accessit* Edgar Lobel, Scholar of Balliol; Greek Prose, George Douglas Brooks, Scholar of Worcester. Stanhope Historical Essay Prize: Leonard V. Davis Owen, Scholar of Keble.—Gladstone Memorial Prize: Alwyn T. P. Williams, Scholar of Jesus.

Exeter.—Exhibition (Modern History): Allen C. Moore, Felsted School. Exhibition (Modern Languages): F. D. Barker, Royal Grammar School, Colchester.

Queen's.—Honorary Scholar: Leonard Davies, Commoner of the College.

Pembroke.—Open Scholarships in Classics: W. S. Clark, Edinburgh University, Hull Scholar, £100 a year; A. J. Mainwaring, King's School, Worcester, Cleobury Scholar, £100 a year; A. M. Whitehead, Dulwich College, Henney Scholar, £90 a year; T. F. Heyworth, Birkenhead School, Foundation, £80 a year. Open Scholarships in Modern History: P. M. Vincent, Cheltenham Grammar School, Boulter and Radcliffe Scholar, £80 a year; A. G. Gamble, Mill Hill School, Abingdon Scholar, £80 a year; and R. E. M. Haines, St. David's College, Lampeter, King Charles I. Scholar, £80 a year.

ST. ANDREWS UNIVERSITY.—Berry Scholarships, £80 for one year: Divinity and Church History, A. J. H. Gibson, M.A., B.D.; Classics, J. G. W. Ferguson, M.A.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on May 19. Present: Dr. Wormell, in the chair; Mr. Bain, Mr. Baumann, Rev. J. O. Bevan, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Brown, Mr. Charles, Miss Crookshank, Mr. Easterbrook, Mr. Eve, Mr. Hawe, Mr. Holland, Miss Jebb, Mr. Kelland, Miss Lawford, Rev. R. Lee, Sir Philip Magnus, Dr. Maples, Mr. Marx, Mr. Millar Inglis, Dr. Moody, Mr. Pendlebury, Mr. Rule, and Mr. White.

The minutes of the last meeting were read and confirmed.

Prof. Adams was appointed to deliver the Autumn Course of Lectures on the Practice of Teaching, to commence in September next.

Dr. E. W. Maples was appointed to represent the College on the Committee of the International Home Education Congress, to be held in connexion with the Brussels Exhibition in 1910.

Saturday, July 17, was fixed as the date of the forthcoming General Meeting of the members of the College.

The representatives of the College on the Federal Council reported that, with a view to securing unanimity among the different branches of the teaching profession as to the constitution of a Registration Council and the principles upon which a Register should be framed, Dr. Gow's Committee had proposed to convene a conference of representatives of Associations of teachers, but that the Committee had not been able to agree as to the matters which should be laid before such a conference. The following resolution was adopted in reference to the above: "That the Council express its approval of the action of its representatives on the Federal Council, and request them to continue their efforts to bring about a conference to discuss the subject of registration and to frame a scheme."

A Special Committee was appointed to consider what steps should be taken in view of Mr. Eve's intended retirement from the office of Dean of the College.

Mr. E. C. Jee, D.Sc. Lond., F.I.C., F.C.S., 39 Pepys Road, New Cross, S.E., was elected a member of the College.

The following books had been presented to the Library since the last meeting of the Council:—

By MR. H. BAUMANN.—Bernhardy's Grundriss der Griechischen Litteratur (3 vols.); Kohler's Die Praxis des Kindergartens; Wiese's Verordnungen und Gesetze, and Das Höhere Schulwesen in Preussen, Vols. II. and III.

By J. CURWEN & SONS.—Fisher's The Musical Examinee.

By HACHETTE & CO.—Defodon's Choix de Fables de la Fontaine et autres Auteurs.

By MACMILLAN & CO.—Earle's Swift's Gulliver's Travels (abridged); Glazebrook's Selections from the Poems of Robert Browning; Punchard's Lamb's Tales from Shakespeare (Second Series); Siepmann's French Series for Rapid Reading (12 Parts).

By J. MURRAY.—Weekley's Mérimée's Chronique du Règne de Charles IX.

By RIVINGTONS.—Edwards's Notes on British History, Parts I. and II.

Calendar of the Royal University of Ireland, 1909, and Supplement.

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CURRENT EVENTS.

Fixtures.

M. B. MINSSEN will address the Société Nationale des Professeurs de Français en Angleterre on "Le Masque de Fer," at the College of Preceptors, on June 26, at 4 p.m.

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THE seventh vacation term for Biblical Study will be held at Girton College, Cambridge, July 24 to August 14.

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MR. H. J. MACKINDER will deliver an address at the Caxton Hall on June 4 at 3.30 p.m., describing the work of the Visual Instruction Committee of the Colonial Office in various parts of the Empire. Tickets from the Secretary to the Committee, Colonial Office, Downing Street, S.W.

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THE Nature Study Society's Exhibition of Aquaria, Vivaria, and other means of observing animals, with photographic and microscopic illustrations, will be held at the Gardens of the Royal Botanic Society, Regent's Park, on June 4 and 5.

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THE new buildings of the University of Birmingham will be formally opened on July 7 by the King, who will be accompanied by the Queen.

* * *

AT Manchester University, the new Engineering Laboratories will be opened by Sir Alexander Kennedy on July 15, and Viscount Morley of Blackburn (Chancellor) will open the new session with an address on October 5.

* * *

THE University of Caen announces Cours de Français in July and August. Diplomas given. Particulars from M. le Prof. Lebonnois, 16 rue Guilbert, Caen.

Honours.

ON the occasion of the Darwin centenary celebrations the University of Cambridge proposes to confer the honorary degree of Sc.D. upon the following:—

Edouard van Beneden, Professor of Zoology in the University of Liége; Robert Chodat, Professor of Botany in the University of Geneva; Francis Darwin, M.A., Christ's College; Karl F. von Goebel, Professor of Botany in the University of Munich; Ludwig von Graff, Professor of Zoology, in the University of Gratz; Harald Höffding, Professor of Philosophy in the University of Copenhagen; Jacques Loeb, Professor of Physiology in the University of California; Edmond Perrier, Director of the Natural History Museum, Paris; Gustav Albert Schwalbe, Professor of Anatomy in the University of Strasburg; Hermann von Vöchting, Professor of Botany in the University of Tübingen; Hugo de Vries, Professor of Botany in the University of Amsterdam; Charles Doolittle Walcott, Secretary of the Smithsonian Institution, Washington; Edmund Beecher Wilson, Professor of Zoology in the Columbia University of New York; and Charles René Zeiller, Professor of Palæobotany in the Ecole Nationale Supérieure des Mines, Paris.

It is proposed that the honorary degree of M.A. be conferred upon J. D. Anderson, Gonville and Caius College, Teacher of Bengali.

* * *

THE title of Professor Emeritus has been conferred by Oxford Convocation upon Dr. T. Kelly Cheyne, late Oriel Professor of the Interpretation of Holy Scriptures.

* * *

OXFORD UNIVERSITY has conferred the honorary degree of D.Litt. upon Mr. John Sampson, Librarian of the University of Liverpool.

IN addition to the honorary degrees recorded in our March issue, the University of Liverpool has conferred the following:—

D.Litt.: Dr. Edward Meyer, Berlin University.
D.Sc.: Dr. Francis Darwin, Cambridge; and Prof. J. L. Todd, McGill University, Montreal.
D.Eng.: Hon. C. A. Parsons.
M.A.: William Fergusson Irvine, of Liverpool.

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THE University of Wales has resolved to confer the honorary degree of LL.D. on Sir Samuel Evans, the Solicitor-General; Lit.D. on Prof. Kuno Meyer, of Liverpool University; M.A. on the Rev. Evan Rees, Archdruid of Wales, and on Mr. John Ballinger, ex-Librarian of Cardiff.

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THE University of Glasgow has conferred the honorary degree of D.Litt. upon Mr. Stanley H. Turner, Lecturer in Political Economy in Aberdeen University.

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THE REV. T. KELLY CHEYNE, and Prof. J. Cook Wilson, M.A., late Fellow of Oriel College, Oxford, and Lord Balfour of Burleigh have been elected Honorary Fellows of Oriel.

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MR. WILLIAM SCHLICH, M.A., F.R.S., Professor of Forestry, Oxford, has been elected an honorary Fellow of St. John's College.

* * *

DR. DREYER, Professor of Pathology, and Dr. Vinogradoff, Professor of Jurisprudence, in the University of Oxford, have been admitted as foreign members of the Danish Royal Scientific Society.

* * *

A MEDALLION of the late Prof. Strachan, by Mr. John Cassidy, was unveiled at Manchester University (May 26).

* * *

THE Associateship of Bristol University College has been conferred upon Prof. W. C. Swayne, M.D., B.S.; Mr. A. J. M. Wright, M.B., B.S.; Miss E. H. Geake, B.Sc.; and Miss C. Slade, B.A.

Endowments and Benefactions.

THE Bishop of London heads an appeal on behalf of St. Mary's College, Paddington, for £10,000 for removal to more suitable locality and buildings, and for £500 a year (guaranteed for five years) to replace the London County Council grant (£300 to £500 for the past seven years, but to be withdrawn at the end of the present year).

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OXFORD Convocation has accepted some £1,000 subscribed to establish a studentship, tenable at the British School at Rome, in memory of the late Prof. Pelham.

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THE trustees of the Oxford University Endowment Fund have given £250 for three years to provide the stipend of a Lecturer in Japanese in the University; and £250 for three years for a Lecturership in Political Theory and Institutions.

* * *

BRASENOSE COLLEGE has given £200 a year for five years to augment the stipend of the Professor of Human Anatomy at Oxford.

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Mr. Charles M. Powell, of Corpus Christi College, has provided for a perpetual annual sum of £250 for increasing the endowment of White's Professorship of Moral Philosophy, to which the College contributes.

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Mr. Francis L. Griffith, Reader in Egyptology at Oxford, has given the University £8,000 in aid of Egyptological research.

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An anonymous donor has offered to add £500 (if required) to the £500 voted by the University of Cambridge for the Darwin commemoration this month.

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The Goldsmiths' Company has made a munificent gift of £50,000 to the Imperial College of Science and Technology, to facilitate an extensive addition to the City and Guilds Central Technical College.

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Mr. C. Hawksley has promised a donation of £4,000 for a Hydraulics Laboratory, in memory of his father, Mr. Thomas Hawksley, M.I.C.E.

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Dr. Caton, on completing his term of office as Lord Mayor of Liverpool, has presented to the University of Liverpool a silver mace (fashioned by Messrs. Elkington) "as a testimony of the love of the citizens for humane and scientific studies."

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Mr. Henry Rutson, of Newby Wiske, has given a fifth donation of £1,000 to the University of Leeds.

* * *

The Working Men's Club and Institute Union proposes to establish a Scholarship (a year's tuition fees and maintenance, with £10 out-of-pocket expenses and railway fares to and from college) at Ruskin College, Oxford, in memory of the late Mr. Hodgson Pratt.

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The Drapers' Company have made a furthur donation of £10,046 to Bangor University College—this sum together with the £5,000 previously granted to be applied in payment of the new library and museum of the College.

* * *

Mrs. Bell Pettigrew has given £400 to St. Andrews University towards the cost of the new hot-houses for the Botanical Gardens.

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An appeal for £5,000 towards the building fund of St. Michael's College, Llandaff, is issued with the cordial support of the Welsh Bishops.

* * *

The Hon. Lewis Thomas, M.L.C., Queensland, has given £1,000 to found a scholarship at the University College of Wales, Aberystwyth, for boys from the parishes of Llanfihangelgoneu'r-glyn and Llancynfelin.

* * *

The Council of Serampore College appeals to Christians generally, and to the British Baptists in particular, for £250,000 for endowments and equipment, in view of the proposed revival of the University Charter granted in 1827 by Frederick VI. of Denmark, and confirmed in 1845 by the Treaty of Cession of the Danish Colony of Serampore to Great Britain. Liberal aid is expected from America; and it is proposed that the British Baptists should contribute £60,000—the capitalized equivalent of the £2,000 a year now spent by the Baptist Missionary Society on its work at Serampore. Carey, Marshman, and Ward well deserve such a commemoration.

Scholarships and Prizes.

Brasenose College, Oxford, offers a Colquitt Exhibition, £40 a year. Examination, June 15, in Divinity and Classics. Candidates must declare intention of taking Holy Orders.

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Christ's College, Cambridge, offers two Choral Exhibitions, £25 a year for three years. Competition, June 17. Apply to the Tutor (Rev. J. W. Cartmell).

* * *

Selwyn College, Cambridge, offers an Organist Scholarship, £30 a year. Examination, June 18. Apply to the Vice-Master.

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Westminster School offers not less than seven residential and two non-residential Scholarships and some Exhibitions. Examination, June 23–25. Particulars (by letter) from the Bursar, Little Dean's Yard, S.W.

* * *

Cheltenham College offers at least eighteen scholarships, £80 to £20, and some House Exhibitions. Examination, June 8 to 10. Particulars from the Bursar.

Appointments and Vacancies.

The Belfast Commissioners, under the Irish Universities Act, 1908, will proceed at an early date to appoint to Professorships in the Queen's University in Modern History, Economics, Botany, French Language and Romance Philology, Jurisprudence, and Roman Law; and to Readerships or Lectureships in Archæology and Ancient History, English Language, Celtic Languages and Literature, Moral Philosophy and History of Philosophy, Logic and Scholastic Philosophy, Physics, Organic Chemistry, Bio-Chemistry, Geology, and Mineralogy. Information as to salary and other terms of these appointments may be obtained from Arthur Jaffé, Secretary to the Commissioners, Queen's College, Belfast.

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Prof. Burnet, of St. Andrews, has declined the invitation to occupy the Chair of Greek at Harvard.

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The Vinerian Chair of English Law to Oxford is vacant by the resignation of Prof. A. V. Dicey, D.C.L., after twenty-seven years' service.

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Mr. John H. Gubbins, C.M.G., has been appointed to the new Lectureship in Japanese at Oxford.

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The Principalship of the University of Aberdeen is vacant by the death of the Very Rev. Dr. John Marshall Lang, C.V.O.

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The Principalship of New College, Edinburgh, vacant through the death of the Rev. Marcus Dods, D.D., has been filled by the appointment of the Rev. Dr. Whyte, Edinburgh.

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The Rev. Dr. J. O. F. Murray, Warden of St. Augustine's College, Canterbury, formerly Fellow, Dean, and Tutor of Emmanuel, has been appointed Master of Selwyn College, Cambridge.

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Mr. Grafton Elliot Smith, Professor of Anatomy in the Government School of Medicine, Cairo, has been appointed to the Chair of Anatomy in the University of Manchester.

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Mr. T. H. Laby has been appointed Professor of Physics in Victoria University College, Wellington, N.Z.

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Mr. H. O. Meredith, M.A., M.Com., Lecturer in Economic History in Manchester University, has been appointed Girdlers' Lecturer in Economics in Cambridge University.

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Mr. W. T. Layton, B.A. Lond. and Camb., has been appointed Newmarch Lecturer at University College, London, in succession to Mr. G. Udny Yule, resigned.

* * *

Miss Rachel R. Reid, M.A., Lecturer in History at Girton College, has been appointed Assistant in the Department of English History in University College, London.

* * *

Mr. S. Ménardo, D.Ph., LL.D. Athens, has been appointed Lecturer on Late Greek in the University of Oxford.

* * *

Mr. Douglas Knoop, M.A., Gartside Scholar and Langton Fellow, has been appointed Assistant Lecturer in Economics and Commerce in Manchester University.

* * *

The Rev. Stuart Blofeld, B.A., B.Sc. Lond., Vice-Principal of St. John's College, Battersea, has been appointed Principal of the Training College, Saltley.

* * *

The Head Mastership of Haberdashers' Aske's Hampstead Boys' School is open. About £700. Apply, by June 5, on form to be obtained from R. J. Ellis, Aske's Hatcham School, Jerningham Road, New Cross, S.E.

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Mr. G. B. Alcock has been appointed Principal of the Secondary School and Technical Institute, Chorley.

* * *

Dr. Burnie, Principal of the Central Polytechnic, Croydon, has been appointed Principal of the Municipal Technical College, Brighton.

* * *

Mr. Walter Ernest Cross, B.A. Cantab., Senior Science and House Master, Whitgift School, Croydon, has been appointed Head Master of King's School, Peterborough.

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The Rev. Edmund Audley Downes, M.A. Oxon., Assistant Master, Wellington College, has been appointed Head Master of St. John's College, Leatherhead.

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Mr. Alfred Cradock Maples, B.A. Cantab., Mathematical Master, Exeter School, has been appointed Head Master of Midhurst Grammar School.

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Mr. E. C. Chappell, M.A., LL.B. Dubl., Organizer of Commercial Education at the Grocers' School, Clapton, has been appointed Head Master of Spalding Grammar School, in succession to the Rev. E. M. Tweed, M.A., who has been appointed Rector of Burton Coggles, near Grantham.

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Mr. J. J. Lloyd Williams, M.A. Oxon., Head Master of Oswestry Grammar School, has been appointed Head Master of Ruthin Grammar School, vacant by the resignation of the Rev. W. P. Whittington, M.A., after twenty-eight years' service.

Literary Items.

Mr. J. H. Yoxall, M.P., has undertaken to edit a new series of the *Schoolmaster*, which will commence on June 5. While the old-established weekly will continue its customary features and remain the organ of the N.U.T., it will develop a wider scope.

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The World's Work rises to the occasion of the "Imperial Press" Conference. The June number is much enlarged, containing a wide range of articles on Imperial topics, with portraits of the leading members of the Conference. The cover reproduces a symbolical painting indicative of the world-wide influence of the "Imperial Press."

General.

Oxford University has established a Professorship of the Romance Languages, to be supported from the funds of the Taylor Institution (£300) and the Common University Fund (£200), till Corpus Christi College is in a position to endow the chair.

* * *

A Chichele Professorship of Military History has been founded in Oxford University by All Souls College.

* * *

Bristol has now obtained its University Charter. The Town Council has resolved to grant the University £7,000 a year—a penny-in-the-pound rate.

* * *

At the meeting of the British Association at Winnipeg (August 25), Dr. Gray, Head Master of Bradfield College, will be President of the Educational Science Section, and Mr. J. L. Holland, Director of Education in Northamptonshire, will be Recorder.

* * *

Prof. Viëtor has just celebrated the twenty-fifth anniversary of his appointment to the Chair of English Philology at Marburg. Dr. Viëtor was previously a Lecturer at University College, Liverpool.

* * *

The Aerial League of the British Empire purposes to establish a National (surely it ought to be an "Imperial") Aeronautical College.

CORRESPONDENCE.

REGISTRATION OF TEACHERS IN SECONDARY SCHOOLS.

To the Editor of "The Educational Times."

Sir,—Do not the negotiations between the Board of Education and Dr. Gow's Committee reveal the fact that it is in vain to look to the Government for a speedy or satisfactory settlement of this question?

Why should not secondary teachers cut the Gordian knot by taking the matter into their own hands, and by arranging—as a preliminary measure—for the compilation of a list of acting teachers in all schools other than public elementary?

There seems no valid reason why the College of Preceptors should not co-operate with the Federal Council and take the lead in this matter. The present position of affairs is a disgrace and scandal to all parties concerned.—I am, Sir, &c.

Chillenden Rectory, Dover. J. O. Bevan.
May 22, 1909.

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THE TEACHING OF EDUCATIONAL HANDWORK.

[From a Paper by Mr. CHARLES BIRD, Superintendent of Educational Handwork to the Leicester Education Committee, read to the National Union of Teachers at Morecambe.]

HITHERTO our schemes of education have depended upon adult ideas as to what children require for their development. We now see that the needs and desires of children are necessarily different from our own, and, if we would help instead of hinder and thwart that development, we must study the child. In the first few years of his life the child has absorbed an enormous amount of knowledge of vital importance to his very existence; his every sense is quivering for fresh experiences and fresh power, even in the most narrow and gloomy surroundings. Watch his vast unaided conquests, his fertile, ingenious brain; his vivid imagination, and his intense excitement over little things which have long ago ceased to interest us. His great delight is in feeling, seeing, hearing, tasting, and smelling, especially in feeling and seeing. He stores up truths in harmonious order unconsciously in his little mind, and weeds out the false from the true—that most potent factor in all animal life in the war of self-preservation—with the unerring instinct of unsophisticated nature. The child finds his interests in the multitudinous affairs of home, garden, street, and field; his play and his work bring him into intimate relationship with the visible world around him. I do not think we sufficiently take into account the tremendous difference to a child between the work and freedom of its home life, and the work and restrictions, often needless and even ridiculous, of the school. It is a new and often incomprehensible world.

In the typical school of the period, little or no provision is made for educating the child through these all-absorbing interests and activities, and yet it is through his interests alone the child can be developed, for if a child lacks interest it is folly to expect him to absorb knowledge; the faint impression produced soon fades away. On the other hand, however, if the interest be awakened, the teacher's task is changed from a hard, unnatural, and unfruitful labour to a pleasant guidance.

"WHAT MUST BE OUR AIM IN THIS WORK?"

Foremost among the reasons for making educational handwork an essential part of the school method is the interest it creates in the children. If a reasonable method be adopted not interest merely, but enthusiasm, will be the result. During the past six years, in my experience of handwork at Leicester, I have several times known the Government Inspectors endeavour to find out how long the children would continue to be interested. The question has not yet been satisfactorily settled, because the school session invariably ended before the interest. I have certainly *heard* of children taking little or no interest in handwork, but am quite convinced the fault lies elsewhere than in the subject. Day by day I see hundreds of different boys and girls at their handwork, and their eager, bright, joyous faces all tell the same story. Give educational handwork a fair trial upon right lines, and I know you will find its potentialities increase and widen as your own knowledge of it extends, until there will scarcely be a nook or cranny of your whole curriculum that will not in some way or other be lightened and brightened, both for you and your children. And what must be our aim in this work? It must be the harmonious development of the children—we cannot aim higher, we must not aim lower.

It will hardly be denied that the normal child possesses in a marked degree such characteristics as curiosity, inquisitiveness, a love of prying into things, of questioning and doubting, which are frequently amusing and sometimes embarrassing. Of his originality, adaptability, rescurcefulness, and independence there can be no possible doubt. It is these characteristics, so pre-eminent in their importance as assets in after-life, which a reasonable system of educational handwork can stimulate and strengthen. It is greatly to be feared these characteristics have not been strengthened, but rather weakened, by the educational method of the past.

For this purpose the children must be allowed to depend upon their own thought and judgment in doing things. If the work given be interesting in character, and not too difficult for mind and hand to fashion, surely the children may be allowed to exercise their whole powers upon it without let or hindrance; where unreasonableness is shown, failure to adapt means to ends and the like, the cause is discoverable, and it is the business of the teacher to see that the children discover it. Let the children see, think, and do; later may possibly be the time for explanations, surely not before.

As regards moral development, it may be noticed that, under the conditions mentioned, the children are *revealing* themselves. Their own thoughts, ideas, words, and actions are what we seek and require. It can hardly be questioned that an atmosphere—an environment favourable for moral growth—is thus created. Character depends largely upon action; it must therefore be all-important that the activity be mental as well as physical. Strenuous intellectual and bodily work, done in a free atmosphere, must call for the exercise of moral qualities of the highest order, and help to develop a power to concentrate the attention and a courage to persevere which cannot fail to be of the greatest service in after life.

METHOD.

I have attempted to realize these aims in the following manner. For each standard I have drawn up a series of models—a scheme of work in material. These models, wherever the materials allow it, are all useful articles or toys, and interesting from the children's point of view. The series is constantly being altered. One of the reasons for substituting fresh models for those already in the courses is the knowledge that the children do not like them. At present the lesson occupies one hour per week in Standards I. to IV., and the same kind of material is employed the whole year. If a longer time weekly were devoted to such work, different kinds of material could, I think, be advantageously used in the same year — say, one following another alternately. The time is about two and a half hours weekly for the handwork of the boys of Standards V. to VII., and the special grant is paid on this work. The material is plastic in the First Standard, cane in the Second, paper and thin cardboard in the Third, and wood, cut with a knife, in the Fourth. If, for any reason, the teachers prefer not to take the knife-work with the girls, they can take a second course of cardboard work. In passing, I may state that in my experience it is the *men* who think knife-work is "ridiculous," "nonsensical" (the selection of adjectives I have heard used is by no means exhausted) as a means of education for girls. The *lady* teachers are by no means so sure as to its being useless. As a matter of fact, I know several who are enthusiastic in its favour. A lady visitor of great experience told me the other day it was the finest thing for girls she had ever seen. After the Fourth Standard, the boys take, or should take, the ordinary woodwork and the girls the domestic subjects.

The dominant note of the whole of the courses of models is simplicity. They depend for their beauty, if the charity of critics will allow any, upon good proportion and a simple outline adapted to the purpose for which they are intended, rather than upon elaborations of any kind. This simplicity is necessary; the work is to be the result of the children's own thought—the activities are to be self-directed and the experience gained be really first hand. The courses are used so as to stimulate the inventive faculty; the children are encouraged to use the class model merely as a standard—something to which reference can be made to show essential features, &c., details being left to their own initiative.

The method of teaching is the same in each of the courses.

The first model in each course is intended to be the simplest possible for the material, such as a little ball in the plastic media, a little mat in cane, a simple rule in wood, &c. The grading is by very easy steps, so that the least developed child can surmount the difficulties. As the teacher begins to find out the capacities and capabilities of the children, provision is made for the quicker ones by allowing them to miss models here and there, and so arrive at the more difficult ones quicker. This method is adopted with classes working the same model, and when each individual is doing a different one.

ILLUSTRATION OF PROCEDURE.

As an example of the manner of dealing with the handwork, let us take the first model of any course. This model is made by the teacher previous to the lesson, so that the children do not see how the work has been done. The model is shown to the children, and they are asked to tell all they can about it. Whatever information is given comes from *the children's own initiative*, not from the promptings of the teacher. It is evident that the more senses which are employed in conveying the impressions to the mind and the nearer the senses are to the object, the deeper and the more truthful will those impressions be. It is therefore reasonable that every sense be brought to bear that can be of service. The children are required to give expression to these

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impressions in clear and exact language. This part of the work is never omitted, but it is often deferred to the end of the lesson. Similar observational and critical lessons are taken on every tool, material, &c., employed in the work. It is very important that these expressions of sense impression be encouraged by every possible means, and that, of course, in as many different ways as possible—by drawing, in material, by writing, painting, &c., but especially by *word*, the common method of intercourse between human beings. How loose and inexact the language of ordinary school children is!

It can generally be arranged that each child has a model, tool, piece of material, &c., in his hand when giving oral expression to his sense impressions. The children must be required to dig deeper and deeper into the matter as time goes by, till nothing is concealed that can be revealed. This ample and extensive, not to say profound, revelation of the object must come entirely from the children—they must *not* be told. It appears to me to be a sound principle to act upon, that children should know *everything about something*. Has the shallowness of the age, of which one hears so much, anything to do with beginning too soon to learn *something about everything?* Any way, as the child is to be his own engineer in this matter, he must know all his senses can tell him of the thing, or the hiatus will cause illogical thinking and poor execution.

The model is thus reviewed and criticized from every aspect that the ingenuity of the children can devise. They are now required to draw it or get material and make it, as the case may be. The teacher watches the proceedings with "masterly inactivity," as a Government Inspector named the attitude of one of my teachers the other day. When sufficient, reasonable and unreasonable, methods of attacking whatever problem awaits solution have been observed, the teacher calls a halt. The methods, tools used, &c., are all brought to the notice of the scholars and freely and critically discussed by them.

I think it very important that the teacher should not bias the children in their judgments: each and all must, and will, take a part in questioning, in Socratic vein, the various methods brought to their notice; other methods also must be obtained from the children. There is a discoverable reason why one method is better than another, if it be better, one tool more adapted to the purpose in hand than another, &c. If we wish children to develop a reasonable judgment in all things, as we surely do, we must on no account discover for them what they can discover for themselves. And what can they not discover?

Self-Reliance.

The teaching proceeds on these lines throughout. It will be understood that the unreasonableness tends to apply to the individual rather than the class as the work proceeds; hence the criticism tends to become individual. My experience is that children treated in this way, left to their own resources for their seeing, thinking, and doing, and then examined critically in every detail of their action, become more and more reasonable as time goes by. Uniformity of method—in other words, the teacher's method—is not even desirable. What is wanted is that each child finds its own method. If the children reveal themselves, the teacher can act from sure knowledge of strengths and weaknesses, of needs and necessities. Otherwise, if the teacher supplies the method, the children are robbed of their natural inquisitiveness and curiosity, and may become mere storehouses of dead information. A little patience and a cheerful manner are all that are required to bring out the innate courage and capacity of the children, and cause them to attack their work with an intelligence, a vim, and a vigour delightful to observe.

We all depend for self-preservation upon our own judgment. It cannot be a reasonable thing that, in the thousand and one daily actions and activities of the school, the child should be compelled so often to act by the judgment of others. "You must do things this way" and "You must not do things that way" are far too frequently heard. I think a better answer to the question, "How should I do this?" is, "Do it as you please."

It is perhaps necessary to say a few words with regard to the accuracy of the finished work it is reasonable to demand. I say "perhaps," because some will doubtless be wondering how a method, entirely voluntary and dependent for its success upon the interest it creates in the children, can or need "demand." If the right atmosphere is there, the children will give freely and spontaneously all they have the power to give as regards accuracy and the other virtues, and the power to give will grow by the exercise.

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THE DANGERS OF ILLUSTRATION IN CLASS TEACHING.

AT the Evening Meeting of the members of the College of Preceptors on Wednesday, May 26, Dr. A. E. C. DICKINSON in the chair, Prof. JOHN ADAMS read the following paper:—

Speaking generally, teachers are not in danger of giving too much attention to the subject of Illustration. The danger is all the other way. It is the commonest thing in the world to find a teacher depending for his illustrations on the spur of the moment. If he has a mind particularly well stored with matter on the subject he is dealing with, he may escape from the most serious defect of all—the supplying of tiresome strings of more or less similar and eminently commonplace examples of the rules he is expounding. It is easy enough to supply in almost unlimited quantity examples of the declension of nouns, the conjugation of verbs, natural orders of botany, coalfields, quadrilateral figures, and long division. In all these cases, the connexion between the rule and the example is so clear that no mistake is possible except through such culpable ignorance as is seldom to be found among teachers. Here one example does almost as well as another. The individual content of the example does not affect the general rule.

So soon, however, as we come to a region where the content of the illustration is in itself of importance, we find the hand-to-mouth method very dangerous. The teacher who carelessly dictates at random half-a-dozen English sentences to be turned into Latin to illustrate the construction of *cum* with the subjunctive may lead to all manner of confusion among his pupils who find in the sentences difficulties that have not been prepared for by any previous instruction. Brilliant classical scholarship is no safeguard against error here. All such illustrative sentences must be carefully edited by the teacher who knows the previous training of the boys. No doubt, at a later stage in the teaching of Latin prose, the pupils must be prepared to deal with unedited English passages for translation; for at that stage they have a sufficiently wide knowledge of general construction to allow them to exercise a certain freedom. But even at this stage the master must not select his English classic at random. Certain passages simply cannot be translated into Latin: they contain words and ideas that the classical writers have not had the kindness to anticipate.

In almost every subject the hand-to-mouth illustrator gets into trouble by demanding from his pupils knowledge that is not yet due in the course of study. It is probably idle to labour this point here, for the teacher who has taken the trouble to come to this lecture has given proof that he has enough interest in the subject of method to prevent his making the discreditable bungles that not unfrequently mark the teaching of brilliant scholars, who rely upon their knowledge of their subject to carry them through without taking the trouble necessary to make their teaching efficient. The hearer's danger may indeed be quite the opposite. He may be inclined to over-elaborate his illustrations, and thus to fall into certain errors that may interfere with the success of his teaching.

To begin with, there is the danger of over-illustration. Some teachers seem to regard it as essential to illustrate every point that arises, whether it involves any difficulty or not. What is perfectly clear already needs no illustration. A straightforward statement of fact, dealing with elements well within the pupils' mental content, needs no illustration so long as the teacher's purpose at the time is limited to getting the pupil to understand. Indeed, it is possible that by illustrating what needs no illustration the teacher may cause needless difficulty to arise, especially in the case of the more eager and attentive pupils. Accustomed to attach a meaning to all that the teacher says, they are apt to

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think that since he makes so much of the point he is labouring there must be something in it which they do not understand, and they may grope about for a meaning that is not there.

To be sure, the purpose of illustration is not always to cause another to understand. It may be to make him realize more vividly, to appreciate, to enjoy. We must, therefore, make provision for the æsthetic use of illustration. Some of our older English writers make a very systematic application of this form of illustration. Thomas Fuller, for example, marks off his essays into short paragraphs, each beginning with an easily understood generalization, immediately followed by one or more illustrations that give it point. Thus in his essay, "Of Memory," we have the fourth paragraph:—

> Overburthen not thy memory to make of so faithful a servant a slave. Remember Atlas was weary. Have as much reason as a camel, to rise when thou hast thy full load. Memory, like a purse, if it be overful that it cannot shut, all will drop out of it. Take heed of a gluttonous curiosity to feed on many things, lest the greediness of the appetite of thy memory spoil the digestion thereof. Beza's case was peculiar and memorable. Being above fourscore years of age, he perfectly could say by heart any Greek chapter in St. Paul's Epistles or anything else which he had learnt long before, but forgot whatsoever was newly told him, his memory, like an inn, retaining old guests, but having no room to entertain new.

This use of illustration, common in Bacon and, in a less condensed form, in modern essayists, is valuable in sermons and hortatory addresses, but must be used sparingly in lectures and more sparingly still in lessons.

Essayists who follow, more or less, the method of Fuller are read largely for the interest of the illustrations. But, after all, the best essayists do make their generalizations the important points. All the rest of the matter centres round them. The illustrations may not be necessary to make clear the meaning of the theses; but they at least illustrate. They form an organic part of the whole; they are worked into the warp and woof of the composition. They are not dragged in for the sake of their intrinsic interest. There is a certain danger that illustration may be degraded from its function and used merely as a means of adornment. The weak teacher and the feeble lecturer are sometimes tempted to use illustrations as sedatives. In a well organized lecture or lesson it is possible that the illustration may occupy more space than the statements to be illustrated; but the main statements are felt to be the essential matters. The illustrations, however numerous, are organically interstitial. On the other hand, there are lectures and lessons, and even books, in which the illustrations are the main element, and the rest of the matter is worked in around them. The generalizations are interstitial; the substantive matter is made up of what are nominally illustrations. A lecture on "The Humour of Mark Twain," on "The Blunders of School Children," on "The Ballads of Scotland" are all very likely to turn out to be series of illustrations, with a few strenuously invented generalizations keeping them apart. Very many book reviews are mainly made up of interstitial matter, and lantern lectures have an almost irresistible tendency to resolve themselves into interstitial commonplaces.

Some teachers may sensibly interpose here and maintain that lantern lectures ought to be interstitial. This point of view has a great deal to recommend it, but in adopting it we would be changing the standpoint of our criticism. It is quite reasonable to maintain that the most valuable part of the lantern lecture is the information conveyed by the slides. These are therefore no longer regarded as means of illustration, but as the substantive matter of teaching. The interstitial remarks of the lecturer are really illustrative of the slides. In the case of a literary lecture professing to give a critical estimate of a writer's works, it is illegitimate to depend on the quotations for the main interest of the lecture. The interest should be in the relation the lecturer is able to establish between his generalizations and the particular quotations that he uses to support his views. It is quite possible, too, for a lantern lecture to depend on the actual lecture, so that the hearers recognize that the slides, however good they may be, would either have been meaningless without the lecturer's exposition or would have had quite a different meaning from that they actually took under his manipulation.

It is clearly important for the teacher to distinguish between the values of certain materials as illustrations and as the subject-matter of actual teaching. It is an excellent thing to read to a class a series of extracts from a standard author with only a few explanatory comments—probably a better thing for the class than to give it a seriously worked out lecture in which only illustrative extracts are given. The important point to remember is that the purpose in the two cases is different. In the first case you are giving the actual material; in the second you ought to assume that the pupils know the whole of the works of the author and that your business is to communicate to them certain generalizations supported by quotations. So long as slides are used as teaching matter, the pupil is entitled to attend mainly to them and to the teacher's explanation only in so far as he feels the need of it. When the slides are used as illustration, the incidence of attention should be reversed.

One of the chief dangers in the use of illustration is connected with this problem of the incidence of attention. There is always danger that the illustration may prove more attractive than the matter to be illustrated. An illustration fails when it derails the interest of the pupils from the main lines of the lesson. With certain material illustrations, such as models or pictures, the derailing of interest is so obvious that it at once attracts the teacher's attention, and he takes means to recall it to the main subject. This is comparatively easily done if he has the sense to allow the illustration to exhaust most of its primitive interest before he proceeds to use it as a mere illustration. The time spent in allowing the excitement that follows on the production of the illustration to exhaust itself is well spent, as the pupils will find it possible to concentrate on the line of secondary interest as brought out in the illustrative process. But frequently the derailing is not observed by the teacher, since he may not have considered the immediately previous mental content of the pupils' minds. Any reference to certain of the more urgent interests of the boys may be an excellent way of getting up a secondary interest in some part of the school work. Mensuration may be connected with the football field or the cricket pitch, hydrostatics with boating, dynamics with the proceedings in the gymnasium. In all such cases there is a danger of temporarily derailing the interest from the school subject. No doubt it may be won back again, but in a case of class instruction the temporary aberration may have caused the loss of some important link that may not be caught up throughout the lesson.

The teacher has to remember that every illustration he uses must run the gauntlet of diverging association in the mind of every one in the class. He can never be quite sure that the most innocent illustration may not derail the interest of some of his pupils, even though he takes all possible precautions. But he ought at least to minimize the danger by doing all he can to remove temptations. For example, he must avoid the *arithmetical challenge*. Certain minds are so constituted that as soon as two terms of an arithmetical problem are presented they must proceed at once to work it out. If at one part of a lesson the master or lecturer offers the information that he was sixteen years of age when he read a particular book, and at a later stage mentions how many years ago it was since he first read that book, he will make most of the pupils in the class work out a little sum to determine his present age. Here the loss of attention is slight, but the same sort of thing may take place on a larger scale. Any reference, for example, to a person or place without giving the name will often set up a disturbance that takes quite a long time to settle down. Teachers should avoid the allusive style. To refer to Milton in a lesson merely as "the author of the 'Defensio Populi Anglicani'" may give satisfaction to a certain number of the pupils who happen to know who is referred to. But to certain others the reference will prove a stumbling block; for they will go on wondering who it can be, when they should be following the work of the class. In this particular case the average boy would probably not trouble much, for the reference is not interesting in itself. But let the teacher use some superlative descriptive reference and dissipation of attention will necessarily follow. "The worst king who ever ruled England," "the author of the longest poem in the English language," are references that will disturb any intelligent class. It goes without saying that it is a laudable thing to be interested in discovering the actual persons referred to. The trouble is that the interest is roused at a wrong time. We are so fond of rousing interest that we are apt to forget that it is necessary to allay interest as well as to rouse it. Interest in the right thing at the wrong time is as troublesome as interest in the wrong thing at the right time. In order that the interest of the pupils in the main subject of the lesson may be maintained, all subordinate interests must be ruthlessly dissipated.

Since writing the above, I have furnished for myself an unexpected and involuntary illustration of my theme. No sooner

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had I written the words, "the author of the longest poem in the English language," than I began to feel uncomfortable. I realized that I did not know, and I wondered who it could be. My attention was taken up by this new problem, to the disadvantage of the main subject. Still, I felt that all I had to do was to turn to some standard book on the subject of English literature to get the question answered; so I was able to dismiss temporarily the troublesome interest in favour of the general interest, which was in any case stronger. Had I been a careless pupil in a class the work of which was to me uninteresting, it is probable that I should have gone on worrying about that longest poem instead of turning to the main subject. To practise what I preach I should probably add here that I am told that the longest poem in the English language is Drayton's "Polyolbion."

The allusive style may be excellent in print, but when used in lecturing or teaching it ought to be limited to the most obvious allusions—allusions that are well within the range of the less informed of the class or audience, so that the main effect of the allusion will be to rouse that feeling of satisfaction that accompanies the recognition of an old friend in new circumstances. A typical example of the sort of thing that may, perhaps, be permitted in a book, but that must be excluded from oral teaching, is to be found in Mme. de Coulevain's attempt to explain the meaning of the term *bourgeois*: "The peasant, the workman, the artisan are not *bourgeois*. I might name a king who is more so than many people born in the Rue du Sentier. Napoleon I. was *bourgeois*, Napoleon III. was not. Balzac, Guy de Maupassant were not *bourgeois*: Zola was. Two of our great newspapers, one of our best reviews, are."* At this point Mme. de Coulevain's reader puts his finger between the leaves and leans back, wondering who that king and these publications can be. Unless from the point of view of piquancy, the allusions are a mistake in exposition. If there were any indication of how the missing names could be discovered by the reader for himself, there might be some justification for the mystification, since it would rouse him to take a proper share of the work. But, as they stand, they only aggravate the reader by making him feel his ignorance and, it is no extenuating circumstance to add, Mme. de Coulevain's superiority. Apart from this unprofitable disturbance of mind, the same end could be obtained by saying merely that a king could be as *bourgeois* as the tenant of a flat, and that some of our great newspapers and reviews are *bourgeois*. In a lecture or lesson the hearer would not only be irritated; he would necessarily lose a great deal of what immediately followed the vague references. If the authoress means Louis Philippe, why not say so? The names of the two great newspapers and the review would be much more illuminating than the piquant riddle she has set us. No doubt, in thus making our references specific, we kill a certain amount of interest, but the interest killed is of the unhealthy, distracting kind.

Another very real danger in the use of illustration is the tendency to carry over the illustration as a whole with non-essential as well as essential elements. A teacher wished his class to understand that, for a particular experiment he was describing, it was necessary to cut out an oblong piece from the middle of one end of a board. As some of the pupils had a difficulty in understanding what he meant, he explained that the bit cut out was to leave a hole in the bottom of the board so that when it was placed on end there would be an opening in it like the entrance to a dog's kennel. This seemed to satisfy the pupils, but at a later stage, when they had to make a drawing of the apparatus, several of them made the board appear as a pentagon, like the gable end of a house. They had carried the kennel comparison too far. What in this case could be tested by the sketches would, in the case of merely verbal description, probably have escaped detection, and with young children, in particular, it is probable that many of our illustrations are carried over bodily and incorporated in connexions in which certain of their elements are quite out of place. The teacher must be continually on his guard trying to anticipate possible misconceptions of this kind. Nearly always he will find that, in spite of all his endeavours, some dull commonplace child has contrived an impossible combination that, had it been deliberately made, would have been regarded as very ingenious. To meet such contingencies, a certain amount of verbal pruning is necessary, but, above all, there ought to be a good deal of intercourse in the way of applying the illustrations. A teacher in a City school, in giving a lesson on "The Charge of the Light Brigade at Balaclava," made a sketch-plan on the blackboard with the Russian guns on the right of the board and the formation of Hussars, represented by two vertical lines, on the left. The class, as a whole, seemed to understand the state of affairs on the field; but in the course of discussion it came out that some of the boys—the average age of the class was twelve plus—thought a mistake had been made in the position of the Hussars. As they were represented, the boys maintained, they were charging either north or south instead of eastwards, as they ought to do, if they meant to get at the Russian guns. On probing, the teacher discovered that the double line had misled the boys. There was a cavalry barracks in the city, and when the troops passed through the streets they always went two abreast because of the traffic. The boys had got it into their heads that this two-abreast mode of progression was the natural one for cavalry, and that, therefore, they would charge in this order. It was a revelation to them that the charge was made with such a wide front.

Allied to this error of carrying over non-essentials is that of arousing altogether wrong masses of ideas through some superficial resemblance. Beginners in landscape painting are warned against the little cottage on the hillside with its two tiny windows one on each side of the door, and the little doorstep with the resulting resemblance to a grotesque human face. Not infrequently young people see a ludicrous aspect of some matter that, to the adult mind, appears to be of the most matter-of-fact character. "Speaking of babies," said the Sunday School Superintendent, "I have a baby in my eye now." He was quite serious, and did not at first understand what the youngsters found to laugh at in what he regarded as a very commonplace statement. Occasionally, private jokes of this kind interrupt the attention of individual pupils, but it is the business of a good teacher to anticipate and provide against any such misapplication of ordinary words, so far as such misapplications are likely to affect a whole class. The teacher's safety here depends upon his knowledge of the pupils' mental content. Unintentional jokes in class are always the mark either of ignorance or of bad psychology.

Illustrations are often put in what the illustrator regards as a striking way, and yet are apt to mislead the pupils because of their very vividness. I have heard a teacher, in seeking to give his class an adequate idea of the size of London, make the statement that if all the houses in that city were placed end to end they would reach right round the earth, following the equator. In dealing with the class afterwards I found that the general impression produced was complicated by an incongruous picture in the pupils' minds of an interminable street with only one side to it. Quite a number of the pupils had the literal objection that most of the houses would be flooded, as the equator was for most of the time over the ocean. On asking the teacher how he got his data for the measurement, he frankly confessed that he had no data, but, "thought it would be a very effective way of bringing home to the class the enormous extent of the city." He further wanted to know, "morals apart," what objection I had to the illustration. The objection is indicated in the incongruity brought out above, and also in the mistaken notion that, in some way or other, the imagination of the pupils is aided by the picture of this straggling street. As a matter of fact, the figure suggested great extent, but nothing more. We have only a limited power of being impressed: we have, in fact, a threshold of impressiveness. This threshold no doubt may be raised a little by extended experience, but at the best it soon reaches its limit, and beyond that all further stimulation is useless. As Mr. H. G. Wells says, speaking of Niagara: "a hundred tons of water is really just as stunning as ten million. A hundred tons of water stuns one altogether, and what more do you want?"*

A companion picture to that of the ingenious teacher referred to above is to be found in a text-book of geography that seeks to emphasize the size of London in this way: "A house rises out of the ground every hour of the day; a village of more than three hundred persons is added to its population every day."† This has obviously no pictorial value. We certainly do not want to figure forth the daily emergence of a completed house, and the very name of a village suggests something antipathetic to the city spirit. The mere statement of a daily addition of three hundred inhabitants is sufficiently clear without the obscuring

* Winifred Stephens, "French Novelists of To-Day." 1908. Page 94.

* "The Future in America," page 72.

† Meiklejohn, "The British Empire," page 49.

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figure. As a matter of experience, it turns out that a great many of the pupils who were questioned on the subject proclaimed that they at once multiplied 300 by 365 to get the annual increase, and that the resulting 109,500 was a much more stimulating item than the daily village. The unit adopted has, in fact, a certain influence in the effectiveness of this class of illustration. We all know the stimulating effect of stating our incomes in francs.

At Niagara I read one of those folder advertisements of which the Americans usually make such an effective use. Its purpose was to enhance the wonders of the Falls. The length, breadth, depth, and weight of the body of water was given, and, after the mind had been sufficiently harrowed, the climax was reached by a statement of the number of cubic miles of water that fell over every day. I do not remember the exact figures of the folder, but have a vivid recollection of the sense of anti-climax involved. On calculating out the whole matter, I find the effect even more flattening than my memory led me to expect. Taking the figures supplied by the "Encyclopædia Britannica" (these are old enough not to allow for the great diversion of water for the power stations, and thus give the Falls a fair chance to show up well), I find that 18,000,000 cubic feet of water fall over every minute. This is sufficiently impressive; but, when worked out on the cubic mile basis, the best we can do is to say that in thirteen and a half hours a whole cubic mile of water tumbles over the cliffs. How much more impressive it is to proclaim that in this same period 147,197,952,000 cubic feet pass over. The impressiveness gained by using the magnificent unit of one cubic mile is not nearly sufficient to counterbalance the enormous loss in actual digits. Few people are able to realize what a cubic mile means. In fact, the calculation we have just made has enabled us to understand better what is implied in the higher unit, and so far is of use. But the question we are at present considering is the illustrative value of the one-mile unit, not the possibility of realizing that unit. As a matter of fact, the effect of this paragraph has been to illustrate the enormous bulk of a cubic mile by means of the Falls of Niagara. If it takes even these famous Falls thirteen and a half hours to tumble over one cubic mile of water, then we may have some idea of what this unit implies.

Violent as are the efforts made to raise what may be called "the threshold of stun," they seldom carry us very far. A notable example is to be found in the attempts to convey to the human mind some realization of the enormous distances that separate us from the fixed stars. A favourite plan is to assume that a train starts from the earth and travels day and night at sixty miles an hour. We are then told the exact length of time this train would take to reach the nearest fixed star. The time, however, is so great that there is an opportunity for the mind to conceive of the journey as being a rather restful experience. Instead of being impressed by the enormous space passed over, the mind is inclined to rest upon the evenness of the journey. So far as the illustration appeals to the pictorial it defeats itself, as the hurry and bustle of the train disappears when we project it against the silence of limitless space. Take the following illustration that was burned into my mind at a very early period. It occurs in the geography text-book* on which I was brought up:—

> The distance from Liverpool to New York is about 3,500 miles, and can be traversed in about ten days. At this rate, the time required to go from the Sun to the planets would be as follows:—
>
> | | | |
> |---|---|---|
> | 289 | years to | Mercury. |
> | 540 | ,, | Venus. |
> | 744 | ,, | Earth. |
> | 1,127 | ,, | Mars. |
> | 1,720 | ,, | the nearer Asteroids. |
> | 2,372 | ,, | the more distant Asteroids. |
> | 3,867 | ,, | Jupiter. |
> | 7,092 | ,, | Saturn. |
> | 14,262 | ,, | Uranus. |
> | 22,521 | ,, | Neptune. |
> | 156,500,000 | ,, | nearest fixed star. |
>
> At this rate it would have taken from 1,000 years before the creation of man till now in order to reach even Saturn.

This old illustration is not introduced for its own sake, but because of the effect it produced on certain students to whom it was presented. Their attitude was at once that of the superior person. They did not quote Molière, but they led me clearly to understand that we had now changed all that, and that, thanks to the "Mauretania" and her rivals, we could now cut down these figures by exactly one half. So difficult is it to keep the relative and the absolute in their proper places. To be sure the young men immediately saw their error, and one of them justified himself to some extent by saying that, after all, America *is* really nearer to Europe than it was last century, and to gainsay him was not the part of one who teaches that the true meaning of an idea is the power of behaving intelligently in relation to the content of the outer world involved in that idea.

The only way in which we can realize vast quantities is by manipulating them, and utilizing the conception of relativity. When the astronomer tells us that Sirius is 1,375,000 times further away from us than the Sun is, we take the gentleman's word for it; but we do not realize what he means. It is true that most of us would accept his "arithmetical challenge" and work out the equation:

$$91{,}750{,}000 \times 1{,}375{,}000 = 126{,}156{,}250{,}000{,}000;$$

and some of us might derive some satisfaction from being able to say that Sirius is one hundred and twenty-six trillion, one hundred and fifty-six billion, two hundred and fifty million miles from the earth; but are we any further forward as to what it all means? The answer is to be found in the fact that we can manipulate those figures in an intelligent way. We can make calculations and come to certain conclusions based on them—conclusions, be it observed, that a plain man can come to on his own account when the matter is properly presented to him. The following is taken from a formerly much used text-book of which only a small section is set apart for astronomical matters:

> It has been calculated that if the sun were removed to the distance of Sirius it would shine with only $\frac{1}{1\,5\,0}$ part of its lustre, and it has been conjectured therefore that the diameter of Sirius must be at least twelve times greater than that of the sun. Of this, however, we cannot be certain, for spectrum analysis has taught us, among other things, that stars shine with different degrees of brightness, owing probably to differences of temperature, and that Sirius is among the hottest and brightest of all.*

We have here a calculation—not a very safe one, as the writer indicates, but a quite intelligible one—based upon the enormous distance that we admit we cannot realize. The calculation is none the less valid. When we begin to compare one fixed star with another and arrange the stars into their various magnitudes, we gradually attach a more or less definite meaning to the enormous astronomical numbers: we can behave intelligently towards them. So with the minute subdivisions implied in the atomic theory and the others that are seeking to supplant it. Chemists can act intelligently upon certain calculations based on elements that they cannot realize.

Many illustrations aim at the pictorial when they should really seek to eliminate it. The pupil is told that there are approximately sixteen hundred million human beings at present living upon the earth. It is difficult to realize this vast number; so the illustrator sets about making a picture. He selects some particular part of the world that will just hold all the inhabitants of the earth standing packed together. The best situation is obviously an island, because the imagination will have the aid of the sea in limiting its operations. It is well that the island selected should have some hill from the top of which the whole island can be envisaged. The Isle of Wight fulfils this condition almost perfectly. Standing on Ashey Down, the spectator can command the whole island, with a very trifling exception. The illustrator now proceeds with his calculations. The island contains about 147 square miles, and each square mile contains 27,878,400 square feet. Accordingly the island contains 4,098,124,800 square feet. This, divided by 1,600,000,000, gives almost exactly 2·5 square feet per human being, or a square of about 19 in. side. Having now gathered the whole human race on the Isle of Wight, what better off are we? So far from being helped, the imagination is harassed. It has to work overtime, there are so many things for it to do with this huge crowd. The scene calls up too many irrelevant elements: the different sizes, colours, and odours of those people swept in from all ends of the earth. How are they to be fed? Are we to picture them as arranged by nations, or indiscriminately? How could they stand on some of the steep places in the island? I have seen many a class reduced to desperation by the surging questions raised by this preposterous

* "Modern Geography for the Use of Schools," by Robert Anderson.

* William Lawson, "Outlines of Physiography," page 249.

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picture. As a preliminary to a word picture of the Day of Judgment, the scheme may have its advantages, but for giving an idea of the population of the world it is not very successful. In actual practice it conveys the general impression that there are not so many people in the world after all. The Isle of Wight is such a little place. If the purpose is to show how much room there is still in the world, the illustration has its advantages, though it could hardly be used as a fair argument.

The best appeal is always to the highest unit available in the experience of the persons concerned. Taking the biggest city with which the pupil has personal acquaintance, this could be compared quantitatively with the number of people in the pupil's native country, and then with the world population. The United States has now a population that is approaching the good-natured number 100,000,000, so the American boy has the advantage of a ready-made standard that renders comparison very easy. It does not follow that the American boy realizes what even the population of his Republic means. But all that is necessary for intelligent comparison is present.

We need a standard for our illustrative work, but it is not always necessary to reduce our quantitative illustrations to this standard unit. It is enough if we have a unit to which we can reduce them all, if that be necessary. We ought to have a clear idea of what one square foot means, an acre, and, if possible, a square mile. In certain towns the Municipal Authorities are good enough to lay out somewhere in their parks a square acre, so that the children of the town may grow up accustomed to this as a standard. The Bank of England, in London, we are told, covers exactly one acre of ground, but this is not nearly so useful a standard as the square acre. The bigger the quantities we are to deal with, naturally the bigger the standard unit. With certain astronomical measurements the unit is the radius of the earth, with others the diameter of the moon's orbit, with still others the major axis of the earth's orbit. Whatever the standard, it must be a definite one. The ordinary householder is so perplexed at the unintelligible order to put one fluid ounce of pepsin in a quart of milk that he welcomes the practicable, if inexact, equivalent of two tablespoonfuls. But, in deliberate illustration, some sort of standard should be insisted on. Sir John Herschel has a deplorable illustration of the magnitude and distances of the various planets in the solar system. We are to imagine a level field or bowling green, with a globe two feet in diameter in the middle to represent the sun. Then:

For Mercury, put a grain of mustard seed at distance of			82	feet.
,, Venus,	,,	pea	,, 142	,,
,, Earth,	,,	pea	,, 215	,,
,, Mars,	,,	large pinhead	,, 327	,,
,, the smaller planets, grains of sand at distances varying from			500 to 600	,,
,, Jupiter, a moderate-sized orange at distance of				½ mile.
,, Saturn, a small orange		,,	nearly ½	,,
,, Uranus, a full-sized cherry		,,	¾	,,
,, Neptune, a good-sized plum		,,	1¼	,,

There is no standard here at all. What is the standard size of a pea, a cherry, a plum, an orange? Who is to determine how big a large pin-head is, and, whatever the real size of a pea, the effect the illustration produces on the mind of the ordinary reader is that Venus is larger than it really is in proportion to the earth. If it is said that all that is wanted is to convey a general impression, the answer is that it invites comparisons, and suggests by its discrimination among the various qualifications that the comparisons are accurate. Further, the distances should keep to the same standard: they ought to be all expressed in feet. These criticisms are not the outcome of mere arm-chair reflection. They express the complaints of many classes of students (ages ranging from nineteen to twenty-two) who have been offered instruction through this table.

Naturally the greater the number of different illustrations used, the less the chance of this particular form of misunderstanding, since by the process of arrest the contrary ideas in the different complexes will oppose each other and lead to the elimination of the conflicting elements.

A final danger of the use of certain forms of illustration is the tendency it has to make the pupils dependent on a more or less pictorial setting for their knowledge. If they are always accustomed to have concrete examples set before them, they may lose the power of thinking without such aids. Many people never get beyond the need of having some sort of picture by means of which they can carry on their thinking; and, while this pictorial thinking has its place in our mental life, our efficiency is greatly diminished if we cannot on occasion discard it for a freer form.

Mr. Orchard said there were three primary conditions that all illustrations should fulfil. They should, above all things, be clear; they should not be in any way difficult of apprehension or outside the experience of the pupil; and they should not be overdone, but should always be ancillary to the immediate object of instruction.

Dr. Hayward said, with regard to the danger of illustrations being off the track of the lesson, he would be well content to accept the risk, if only the main object of all teaching—to stimulate the faculties of the pupils—could thereby be secured. A certain amount of distraction there must necessarily be, and the more lively the illustration the more danger of diverting the attention of the pupil; but the aim of the teacher should be to impress as strongly as possible—to exert, as the lecturer aptly described it, a "stunning" effect. If this could be secured, he would willingly sacrifice even such important matters as logical continuity and proportion. Every teacher must have experienced the propensity on the part of the pupils to attach a wrong meaning to general terms—such as "House" of Stuart, "kingdom" in natural history, &c.; and to fix ideas and clear up vague and faulty conceptions was the proper province of illustration.

Miss Stevens remarked that it was often found that personal experiences—what the teacher himself had seen or done—had an unfailing interest for the pupils in the way of illustration; but that it might be necessary for him to be on his guard lest, in his desire to secure an easy effect, the egotistical element should become too marked a habit.

Prof. Adams having replied to the remarks of the various speakers, a hearty vote of thanks to the lecturer concluded the proceedings.

CONFÉRENCES FRANÇAISES.

Société Nationale des Professeurs de Français.

ENGLAND THROUGH FRENCH GLASSES.

By M. J. Duhamel, L. ès L.

Nous nous plaisons à constater que les conférences mensuelles organisées par la Société Nationale des Professeurs de Français en Angleterre au College of Preceptors, Bloomsbury Square, sont régulièrement suivies par un public averti et capable d'en apprécier tout l'intérêt.

Le 24 avril dernier, M. Duhamel, L. ès L., Chargé de Cours à l'Académie Royale Militaire de Woolwich, traitait, devant une nombreuse et brillante assistance, cet intéressant sujet: "Choses et Autres sur l'Angleterre."

Le conférencier s'est attaché à nous démontrer, dans ses prémisses, que Français et Anglais, en général, ne se connaissaient pas. Après avoir fait quelques restrictions en faveur d'une élite, dans les deux pays, il nous a presque convaincu lorsqu'il nous a tracé les amusants portraits que voici:

"La tradition veut, en France, que les Anglais soient longs, portent des favoris rouges et des complets à carreaux. . . . Les Français en font le type du sans-gêne et aussi du sang-froid, de l'aplomb, et aussi de l'excentricité. Ils lui mettent une pipe à la bouche toujours fumante et sur la tête une casquette qui n'en bouge pas. . . .

"Quant aux Français, ah! aux yeux des Anglais, ils ont la réputation de vivre de grenouilles et d'escargots, de parler pour ne rien dire, de papillonner sans cesse autour d'un tremblotant idéal, de ne jamais s'occuper d'œuvres utiles ou sérieuses, d'être colères, ridicules, noirs, petits, de passer leur temps au café à causer politique, femmes ou duels et de faire des gestes." . . .

— Ignorance en deçà, erreur au delà, s'écrie le conférencier. Des aphorismes jamais vérifiés, les maximes, les on-dit, les propos de salon, toutes les causes que Bacon classait sous le chef d'*idola fori*, racontars que n'eût osé rapporter le trop confiant Hérodote, expliquent cet éloignement social, moral et intellectuel, qui n'est guère à notre mutuel honneur.

Les Anglais disent, après un court voyage en France: "Ces extraordinaires Français font tout au rebours de nous!" Et les descendants des Gaulois qui viennent en Albion s'écrient, parodiant Montesquieu: "Comment, mais comment peut-on être Anglais! Mon Dieu, mon Dieu, nom d'un petit bonhomme dans leur île, on ne fait rien comme chez nous!"

* * *

Sapiens nihil affirmat quod non probet, dit M. Duhamel. Et il prouve ce qu'il avance:

En Angleterre on compte par douzaines, en France par dizaines.

Les pains de Paris sont longs, ceux de Londres carrés.

Paris mange les pommes de terre frites, Londres les mange bouillies.

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Paris boit du vin, Londres de la bière.

Paris prend du café, Londres du thé.

Le cocher parisien garde sa droite (quand il y pense), le *cabby* garde sa gauche.

Paris a des fenêtres à espagnolette, Londres des fenêtres à guillotine.

Les *clergymen* ont une femme et pas de soutane, les prêtres catholiques ont une soutane et pas de femme. . . .

Les Anglais tiennent leur fourchette de la main gauche, nous la tenons à tour de rôle dans la gauche et dans la droite. En France les gens comme il faut mettent leurs gants les plus frais pour faire une visite, en Angleterre ils les ôtent pour entrer au salon.

Et l'on pourrait continuer ainsi pendant des heures—mais à quoi bon? Puisque cette proposition est maintenant admissible: "Si *géographiquement* l'Angleterre est aux portes de la France, *socialement* elle en est plus éloignée que la plupart des contrées du vieux Continent."

— Pourquoi?

— Parce que, répond M. Duhamel, nous sommes séparés par des différences de race (vous êtes des Anglo-Saxons, nous sommes des Latins); de climat (vous habitez le pays où il y a du brouillard et nous celui où il y a du soleil); de milieu (l'Angleterre est un pays traditionnaliste, discipliné et pratique, la France un pays d'idéologues et de théoriciens).

* * *

Puis, par une transition habile, le conférencier passe en revue l'art et la littérature des deux pays. Il dit le culte des Français pour la beauté,

Qui flamboie immuable, éternelle,
Des univers entiers roulent sous ses pieds blancs.*

— Vous la comprenez, ajoute-il, mais nous la faisons. Bien vite il rend justice aux Gainsborough, Whistler, Turner, Constable, mais il se demande à bon droit: où sont vos très grands sculpteurs, à part de pures exceptions comme Coysevox, et vos très grands musiciens, à part les compositeurs sacrés? Je sais, dit-il, que vous avez assez d'esprit pour ne pas vous froisser de ces constatations; l'art chez vous, sa réalisation, son concept existe, mais c'est le privilège d'une élite; chez nous, c'est l'apanage du vulgaire.

Après l'art, la littérature.

— La vôtre a des noms, la nôtre des périodes. Vous avez Shakespeare, "l'une des forces de la nature," et la Bible; nous avons le siècle de Louis XIV, etc., etc. Rapidement le conférencier nous fait assister à l'évolution des lettres dans nos deux pays. Il compare ensuite nos langues—l'une énergique, compacte, riche en mots, l'autre flexible comme un fleuret, acérée, riche en idées. L'une, langue des affaires et de la Bible; l'autre, langue de l'amour, de la dissertation et de la conversation.

Souple et à l'aise dans son vaste sujet, M. Duhamel arrive à nous parler du roman français. Il le défend, tout en le jugeant impartialement. Il déclare avec raison, croyons-nous, qu'avec une clientèle *purement* française, les éditeurs de Paris ne pourraient imprimer leurs volumes égrillards. Ils ne feraient pas leurs frais.

"Assurément, continue-t-il, il y a du mélange dans notre roman, dans notre théâtre, comme dans notre peinture; mais, en vérité, les mauvais livres ont trop grande renommée à côté des bons, de ceux que produisent les Paul Bourget, les Maurice Barrès et bien d'autres encore."

Toujours dans son sujet, dont il examine les moindres côtés, le conférencier met ses auditeurs en gaîté par les innocentes questions que voici:

— Pourquoi votre devise est-elle: "Honni soit qui mal y pense," quand Mrs. Grundy est toujours là, vigilante et sévère, prête à voiler des pans de son pudique manteau les statues par trop académiques? Pourquoi dites-vous de quelqu'un *qu'il vous tire la jambe*, quand nous disons qu' "il se paie notre tête"; et pourquoi appelez-vous des *sea-dogs* ceux que nous nommons des "loups de mer"? Pourquoi dites-vous *to take French leave* quand nous disons "filer à l'anglaise"; pourquoi un mouton est-il *sheep* lorsqu'il est sur pied et *mutton* lorsqu'il est sur le plat? Pourquoi, à table, la maîtresse de maison, pour faciliter les choses, ne dirait-elle point à ses hôtes: "Have some more OX"?

M. Duhamel, bon sorcier, avait encore bien d'autres tours dans son sac; il est regrettable que nous ne puissions, faute d'espace, les rapporter ici fidèlement.

* Le Leconte de Lisle, "Poèmes antiques."

Il conclut. "Nos deux peuples, nos deux races, nos deux pays constituent une vivante antithèse. Hélas, entre eux, il est bien plus facile de chercher des contrastes que de trouver des affinités. Nous ne sommes que contrastes! Nous n'avons qu'un point de ressemblance: nous sommes des hommes; et, comme hommes, nous nous sommes véritablement traités comme des chiens. Nous avons guerroyé les uns contre les autres, comme peuples n'ont jamais guerroyé, nous nous sommes franchement haïs, nos intérêts ont toujours été opposés, nos ambitions antagonistes.

Dire qu' à l'heure actuelle ces ferments de jalousie, de rancune, se sont dissous, évaporés, serait une opinion bien crue. Je crois que la race et l'hérédité sont plus fortes que la volonté individuelle et l'affection spontanée.

Il est indéniable, cependant, qu'au moment présent nous nous sentons irrésistiblement portés les uns vers les autres.

Trois causes à cet effet:

1° *Individuellement* nous nous connaissons davantage: ceux des Français qui ont pratiqué l'Angleterre et les Anglais non seulement pendant des mois, mais des années, analysent ainsi qu'il convient, après un long séjour dans l'île inconnue et mystérieuse, le caractère, l'état d'âme de ses habitants; apprécient leur vie confortable et large; jugent favorablement l'insulaire, d'apparence — d'apparence rude et froid, ardent — qui le croirait?—discrètement charitable, et rendent justice à "la force harmonieuse qui, chez lui, unit le culte du passé, la religion des traditions, à l'amour effréné du progrès, à la passion vivace et jamais satisfaite de l'avenir,"—le comprennent enfin, pour l'aimer sans arrière-pensée, lui et sa terre hospitalière, sans que pareille affection les empêche de conserver une noble et filiale tendresse pour leur "doux pays de France, à la lumineuse auréole." Quant aux Anglais qui connaissent la France, ils se seront à la longue assimilé son génie, ils l'auront sondé, ils auront découvert que le fond valait certainement mieux que la surface, ils auront compris—eux aussi—nos compatriotes "adorateurs du hasard, du succès, de l'éclat, du bruit, de la *gloire*, plus capables d'héroïsme que de vertu, propres à concevoir d'immenses desseins plus qu'à parachever de grandes entreprises," comme l'a dit le célèbre historien Alexis de Tocqueville, "tour à tour pour l'Europe un objet d'admiration, de haine, de pitié, de terreur, mais jamais d'indifférence."

2° Commercialement nous nous sentons indispensables les uns aux autres. L'effet du commerce est non seulement de porter à la paix, mais aussi à l'amitié.

3° Enfin, *politiquement* et *mondialement*, Français et Anglais doivent se tenir les coudes. Et celle-ci est une raison d'airain.

Vous, Anglais, avez un vaste empire, le fruit de votre énergie nationale, fertilisé du sang et du labeur de vos enfants, vous voulez le conserver et en jouir dans la paix. Fin légitime.

Nous, Français, possédons un patrimoine intellectuel et moral que nous voulons entretenir et accroître sans cesse, nous reposons sur un passé de gloire, nous vivons sur une fortune détenue par nos rentiers et éparpillée par l'univers. Nous aussi voulons la tranquillité. A côté de nous, d'autres nations, parvenues avides, brûlent, elles, d'agrandir leur place au soleil. A nous de les en empêcher. *Dura lex* . . . Ce sont leurs convoitises qui nous ont rapprochés: "Nous avons une communauté à défendre contre le germanisme."

Telle est la base de l'Entente Franco-Anglaise, nouvel astre du ciel diplomatique autour duquel gravite maintenant un nouvel et imposant satellite: la Russie, qui s'est jointe à nous selon les règles de l'équilibre européen, aussi rigides que celles de la gravitation universelle. Voici la combinaison du XXième siècle, les puissances du centre de l'Europe, d'une part, contre celles de la périphérie.

"Nous, Angleterre, Russie, France, formons la Triple-Entente, opposée à la Triple-Alliance. Nous sommes unis, il nous faut l'être. C'est notre *intérêt*. Il n'y a pas de plus puissant moteur.

"Toutes les manœuvres étrangères pour briser notre lien ont échoué. Réjouissons-nous en, mais prenons garde! N'oublions pas que les *traités* valent toujours mieux que les *accords*—ne nous en tenons donc pas à ceux-ci et acheminons-nous vers ceux-là!"

* * *

Et le conférencier, après cette revue de la politique européenne, termine ainsi: "Jusqu'à cette heure, les conventions qui sont intervenues entre l'Angleterre et la France ressemblent étrangement à celles d'un . . . mariage de convenances; mais personne ne pourra m'empêcher de lever un verre imaginaire au mariage d'amour de John Bull, Esq., et de Madame la France."

Ces souhaits sont les nôtres.

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REVIEWS.

British Glimpses of American Education.

(1) *America at College as seen by a Scots Graduate.* By Robert K. Risk, M.A. (3s. 6d. net. Constable.) (2) *Impressions of American Education in 1908.* By Sara A. Burstall, M.A., Head Mistress, Manchester High School for Girls and Lecturer in Education in the University of Manchester. (4s. 6d. Longmans.)

(1) Written primarily for the newspaper reader, Mr. Risk's pages afford a good deal of information to all who, being interested in American educational developments, are without a first-hand acquaintance with the subject. While the official or conventional views enunciated in documents and upon platforms are stated, the author does not leave us in the dark about the facts as they stand revealed in the daily life of college and University. More particularly he dwells upon features of American University administration which promise direction to those who govern policy and methods in the Universities of Great Britain. For example, Mr. Risk makes it clear that the system of "elective studies" sanctioned by the authority of the late President of Harvard is not capable of indefinite extension without injury to intellectual thoroughness. His remarks upon the position of women undergraduates in a "co-ed. shop" like Cornell should prove illuminating to those who know American co-education only in the pages of its English admirers. The multiplication of Universities would seem to have passed the limits of usefulness in some parts of the Union, where those institutions are said to suffer from a fierce competition whose motive force is not always a pure zeal for knowledge.

Whether that hint prove useful in this country or not, there is no question that we have much to learn from America concerning the proper place of the library in educational organization. German methods and ideals have had great influence upon American conceptions of the purpose and functions of Universities, and in consequence the University libraries of America are the indispensable workrooms not only of teachers and seniors, but of all undergraduates who are intent upon study. Enormous additions are made yearly to the store of books, and much ingenuity is employed, especially in subdivision, cataloguing and ready access, to ensure that workmen and tools are brought frequently and expeditiously together. At home the tyro too frequently, as Mr. Risk says, "has to select his book, without knowing what it contains, and to take it home in order to discover that it does not contain what he wants."

The clubbable disposition of the English-speaking races, grafted upon the German students' *Vereinigungen*, has produced the American "Fratman," member at once of a tiny social coterie in his own University and associated in the bonds of his "fraternity" with members of very many other Universities. In this connexion Mr. Risk tells us of the unsuccessful attempts made at Princeton and elsewhere to break down the exclusiveness of these voluntary societies by the institution of colleges on the model of Oxford and Cambridge. Even the Middle Ages "come by their own" in due course.

Mr. Risk's manner is as entertaining as his matter; his little book is eminently readable from its dedication to Dr. Tuke to its final dictum: "It is a great country, America. In University matters, as in social and political affairs, it does not know where it is going, but it is determined to get there."

(2) Much more comprehensive in scope and more detailed in treatment is the book which Miss Burstall modestly describes as "Impressions." Certain characteristic differences between American and English education are set forth in a general introduction to the volume, which then reviews the work of the high schools, colleges, and Universities. Those responsible for University administration in this country will welcome the information given in these chapters concerning the system of a common entrance examination, which is favoured in the Eastern States, and the system of accrediting to the matriculant the work which he has done in the course of his school career, a plan favoured by the newer State foundations of the Middle-West and West. A chapter on educational institutions, which American law and custom designate "private," furnishes incidentally a criticism of American secondary instruction from within; in many quarters there seems to be considerable distrust of the publicly managed high schools, and a marked preference for secondary schools of the type representing the English public school, which in the American sense is a private corporation.

Miss Burstall then passes from organization to method, dealing in turn with the "Recitation" (whose defect, not noted by the author, is to produce chatterers at large), the teaching of history, the extension of laboratory methods to literary studies, and the recently introduced plan of "group-work," whose object is to foster the social sentiment through close co-operation in the pursuit of studies selected by the members of the group themselves—this last appearing to be one more illustration of the tendency to confuse the child with the adult learner. Miss Burstall fully justifies her statement that "probably there is more to be learned in this subject (History) by English students of American education than in any other." She gives an admirable account of the very valuable work done in many American schools and colleges under the stimulus of the Committee of Seven, and of the fine historical work of many American scholars, work which differs *toto coelo* from the piffle of those who suppose that cooking beans and cranberries is studying seventeenth-century history.

Another chapter of peculiar value to English teachers and administrators is that on Home Economics, since it gives an insight into modes of dealing with a study which already has practical associations with the work of our high schools and of at least one English University. The relative superiority of equipment and of method in American commercial and industrial education is well brought out in the chapters which follow. Whereas we are apt to regard the studies of this order as narrowly technical, impoverished and impoverishing, the American educator has grasped their relation not merely to economic and national life, but to life in general, so that he looks to these to correct that characteristic error of schools which inclines them to separate themselves from the workaday world. The permanence of what may be called the problem of the continuation school justifies the American experiments.

Miss Burstall's last chapter but one discusses the place of women in American education, a discussion which easily passes into that of woman's position with reference to public affairs in general. She notes with some surprise the inferior place occupied by the American woman in this respect, makes it clear that women are confined for the most part to subordinate situations, and that their numerical preponderance amongst teachers is to be accounted for by financial reasons only. The American girl in the high school "exquisitely shod" and wearing "a good deal of jewellery," the American woman at college with her ideal of "social availability," both appear to be *enfants gâtées* who must seriously impair any system of co-education. Indeed, our author gives reasons for believing that at school the boys are sacrificed to the supposed interests of the girls, whilst in mixed Universities the women tend to depress the level of scholarship.

The final chapter is a significant summing up of the author's impressions. It begins by warning us to avoid America's violation of principle, and holds up for our imitation her clever adaptation of labour-saving devices in the schoolroom. These appear to be the chief lessons to be learned from a consideration of American secondary education to-day. In some other fields, however, she thinks we may with advantage imitate things more vital—for example, the less mechanical teaching of the American primary school and the liberal spirit underlying American technical instruction.

That the American belief in education permeates all classes as a very real force is evident not only from the large expenditure, public and private, upon magnificent buildings and equipment, but also from the sacrifices which individual parents make as a matter of course for the sake of their children's education. Apparently the American poor do not make those whining excuses for a neglect of duty which is far too frequently condoned amongst ourselves. But their belief in education does not seem to be a well-instructed belief. American teachers are almost confined to one sex, because women's labour is remunerated at a lower rate: they are paid much less than other Americans, have but a very insecure tenure of office, are crushed under the tyranny of officials, so that men quickly pass out of the teachers' ranks, and first-rate men are rarely found there. The expenditure on the public high schools is insufficient to secure a first-rate secondary education, their classes are too large, and their work is over-organized. American sentiment demands a liberal provision for education, and Americans are ready to make great sacrifices to secure it, but they trust too much to officials and their bureaux. In short, America over-values machinery.

These are some of the conclusions which occur to the reader of Miss Burstall's volume—probably her own view is more just. "It is not easy to dogmatize positively about American education: the more one studies the less one seems to know. But even

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a superficial study of it helps one to understand home better, to see what is best in English education, what must at all costs be preserved" (page 286). As Miss Burstall knows, the test of a national system of education is not in its published programmes and syllabuses, the declamations of the press, the platform or the essay, nor in the statements of the enthusiastic ladies and the astute superintendents who conduct the schools. It is to be found rather in the general tone and intelligence of the community, in the national ideals, in the arts most esteemed amongst them, and in similar observable facts of national life. Tried by these tests, a dogmatizer is tempted to say that American education as at present conducted either fails in its purpose or is too recent to have produced measurable effect. Comparison on this basis seems to indicate that we in this country are already too American, and that we should look across the Atlantic for things to avoid even more than for things to imitate.

Moral Education.

Report on Moral Instruction (General and Denominational) and on Moral Training in Eighteen Countries. By Gustav Spiller. (2s. 6d. net. Watts.)

The Report of the First International Moral Education Congress and the two recent volumes on "Moral Instruction and Training in Schools" edited by Prof. Sadler (Longmans), gave a comprehensive survey of foreign and colonial opinion and practice by a considerable number of expert educationists. The present "Report," which is issued by the International Union of Ethical Societies, may be regarded as complementary. It deals with eighteen countries—Austria, Belgium, the British Empire, China, Denmark, Germany, Holland, Hungary, Italy, Japan, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United States—with Denmark, Norway, Sweden, and Turkey very briefly. Mr. Spiller gives in full most of the moral instruction syllabuses used in the schools, details of the definitely ethical portions of the religious instruction manuals of the principal countries, a large number of references to the subject in the education codes of the civilized world, notes containing the pith of the best literature on the subject, and an annotated bibliography of some 750 volumes. In two introductory essays he discusses the whole question very frankly and at some length. The first essay appeals to the Churches. "The Churches," he says, "by their very principles are bound to hail the spread of universal education, physical, intellectual, and moral; and, since the State is the only force which can compass so far-reaching an end, and since the variety of beliefs makes all theological teaching unjust to tax-payers, parents, teachers, and children as a whole, the State is compelled to develop a non-theological system of moral instruction," in which the State "should have, as in time it will have, the hearty concurrence and co-operation of the Churches." Meantime, however, he has to persuade the Minister of Education to find a place for moral instruction on his lines in the ordinary curriculum: and it will scarcely tend to bring the recalcitrant Churches into concurrence and co-operation to tell them plainly that they "are unfortunately making an efficient system of national education an impossibility by their mistaken insistence on antiquated notions and privileges." Mr. Spiller, in fact, seems not to realize adequately the position of these Churches, and consequently to treat them in a less sympathetic spirit than prudence—not to say justice—might have suggested. Of course, if it is war to the knife, the question of phraseology becomes irrelevant. The second essay discusses the problem of moral education in detail. "The ordinary routine of a good school must be followed in moral instruction as in other subjects, and co-ordinated material must be supplied to the teacher." "For practical purposes the syllabus could not be too explicit or too comprehensive: perhaps by combining the syllabuses of the English Moral Instruction League with those used in the French State schools, considerably extending the variety of detail, the maximum of good might be achieved." Mr. Spiller leaves his "very rough sketch of the material basis of a possible system of moral instruction" to be elaborated by a special committee representing the most varied interests and experiences.

The work is very ably executed, and educationists will be interested in the mass of materials collected as well as in the argument and the suggestions. Apart altogether from the question of religious differences, we confess we cannot resist an unregenerate impatience with such an intolerable deal of moral concussion. How much better than the whole would be much less than the half! Bode a silk gown, and you may get a sleeve of it. The exigencies of polemics may justify Mr. Spiller's thoroughgoing claims, but probably most of the supporters of moral education would be content with the realization of a substantial fragment of his hopes. The British mind may learn much from other countries, but it has its peculiarities—it will not be over-shepherded even into the fold of all the virtues.

Mathematics for Engineers.

A Course in Mathematics. Vol. I. By Frederick S. Woods and Frederick H. Bailey. (10s. 6d. Ginn.)

The authors of the above treatise, of which at present only the earlier and more elementary of its two volumes is under consideration, are excellent exponents of the ideas that have grown up in recent years with regard to mathematical teaching. The subjects discussed and the stage to which the reader advances correspond to the usual course in mathematical study prescribed for the first two years of training in one of the engineering schools of the United States. But whereas, in the past, algebra, analytical geometry, infinitesimal calculus, &c. have formed distinct units of study pursued separately, an able attempt is made by the present writers to combine the instruction in the several subjects. The leading principles of each are introduced just when they seem to the authors calculated to lend most aid in building up the entire mathematical structure. By these means it is sought to make the various branches of mathematical science contribute towards mutual development; by these means it is hoped that the student's more thorough grasp of mathematics as a whole will be secured, and that a general mastery of the tools at his disposal will enable the reader to select for the solution of any given problem the most powerful—often also the most simple—instruments available. For the engineer of the future it will be to prove the superiority or inferiority of the present day training as compared with older methods of preparation.

In the course of instruction framed by the writers of this manual, the early introduction of first ideas of co-ordinate geometry and the calculus offers an undoubted advantage, in that it promotes greater familiarity with the principles of these subjects by extending over a longer period the time devoted to them. The manner in which the contents of the work are treated is excellent. The demonstrations are marked by simplicity both of character and language. An unsatisfactory feeling is naturally created at times by the constantly recurring necessity of deferring the remainder of an argument or the rest of a subject until a later stage. This, however, is preferable to allowing the student either, on the one hand, to regard as complete the discussion of the matter under consideration, or, on the other, to waste time and energy in the attempt to grasp facts not yet within his reach. The gradual unfolding of ideas is very skilfully managed—as, for instance, in the second chapter, when, in connexion with the classification of numbers, the necessity for extending the boundaries of the category so as to include in turn not only positive integers, but fractions, negative quantities, irrationals, and imaginaries, is established in the most interesting manner. Another feature of the work owes its origin to the tendency on the part of junior students to regard analytical geometry as if it related only to the geometry of the conic sections. The authors of the treatise we are considering endeavour to correct the error by the discussion of other curves also. In fact, the aim of the whole work is to enlarge the ideas of the student and to place him in possession of the instruments best calculated to increase his power and aid him in his pursuits. Every effort has been made to produce the book as well as possible, one characteristic being the general excellence of the diagrams, of which, from the very nature of the work, the number is necessarily large.

GENERAL NOTICES.

CLASSICS.

(1) *The Rhetoric of Aristotle: a Translation.* By Sir Richard Claverhouse Jebb, O.M., Litt.D., late Regius Professor of Greek in the University of Cambridge. Edited by John Edwin Sandys, Litt.D., Fellow of St. John's College, and Public Orator. (6s. net.) (2) *Aristotle's Nicomachean Ethics, Book VI.* With Essays, Notes, and Translation. By L. H. G. Greenwood, M.A., Fellow of King's College, Cambridge. (6s. net.) (Cambridge University Press.)

(1) Dr. Sandys has performed the functions of an editor with judicious regard alike to the eminence of the translator and to the claims of scholarship. Whilst supplying accidental omissions and correcting

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occasional oversights, he has added a considerable number of notes, indicating the sources of Aristotle's numerous quotations, explaining literary and historical allusions, and marking variations in the text (so far as they affect the translation) and now and again alternative renderings or opinions as to the meaning. He also furnishes a very able introduction on the general subject of the treatise, keeping in view Jebb's own references in his "Attic Orators," but at the same time handling the matter freely. The translation is characterized by the translator's sureness and deftness of touch, and will be warmly welcomed by scholars and by students.

(2) Mr. Greenwood's work is a fellowship-dissertation slightly altered and enlarged. He finds considerable scope for criticism and explanation, for "probably no book among the whole ten" of the Nicomachean Ethics "has received so little attention from Aristotelian students." The introduction investigates the question of Aristotle's authorship and discusses the doctrine of the Book and its relation to the whole treatise. The text, which however does not rest on any fresh examination of the manuscripts—not likely, indeed, to be very rewarding—is closer to Bywater's than to Susemihl's; and the critical notes are confined to an account of the readings of the best manuscripts and of the chief modern editors in such passages as raise any real doubt. The translation has been thoroughly well thought out and the expression is perspicuous. Two essays, on Dialectic Method and on Formal Accuracy, while quite relevant to the Sixth Book and illustrated entirely from its contents, necessarily take a much wider range of application: the first is largely a running polemic against views of Prof. Burnet. A considerable number of miscellaneous notes discuss points of interpretation in some detail. The volume is very capable, sincere, and independent, making a substantial addition to the Cambridge work on Aristotle and claiming the attention of classical and philosophical students.

Caesar's Commentaries on the Gallic War. Translated into English by T. Rice Holmes, Hon. Litt.D. Dublin. (4s. 6d. net. Macmillan.)

Dr. Rice Holmes has evidently been much exercised about the right method of translating Caesar with success, and he modestly hopes "that even this attempt, with all its defects, will here and there reflect, however faintly, the dignity, the terseness, the directness, the lucidity, the restraint, the masculine energy of Caesar's style." He doth protest too much. His translation is a plain, straightforward, vigorous narrative carefully reproducing the sense of the original. It suffices for the general reader as well as for the student. There is a brief introduction, occasional foot-notes, a full index, and an excellent map—all of them useful additions. The translator's previous works on the subject should be available as collateral aids in the study of the "Commentaries."

MATHEMATICS.

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The Arithmetic of Commerce. By H. H. Talbot. (1s. 3d. Jack.)

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SCIENCE.

An Elementary Treatment of the Theory of Spinning Tops and Gyroscopic Motion. By Harold Crabtree, M.A., formerly Scholar of Pembroke College, Cambridge, Assistant Master at Charterhouse. (5s. 6d. net. Longmans.)

Every properly constituted boy spins a top, but it is not every boy that considers so curiously as Mr. Crabtree does the behaviour of that interesting plaything, or dreams of the "surprising possibilities of knowledge and power" that lie within it. "Who would have thought that in tops lay concealed the secret of steering a torpedo, of steadying ships, or of travelling with security in a single car on a tight-rope at the rate of 130 miles an hour?" "Who would have thought that on such motion as theirs depends the foundation of the most astounding theory of Modern Science—that the so-called solid matter with which we come in contact every day is not really solid after all, but composed of a vast infinitude of particles whirling round one another at inconceivable speeds like planets in the heavens?" The first four chapters are expressly of an elementary character: they "should be intelligible to any reader conversant with the principles of momentum and energy as applied to Particle Dynamics," and suffice to explain the motion of a spinning top, and the practical applications to ships, &c., which are set forth in the fifth chapter. Other chapters deal with the steady motion and the general motion of a top, moving axes, stability of rotation, and periods of oscillation. There are numerous examples and questions (with answers appended), over a hundred figures, and three plates. The whole discussion is most interesting, lucid, and able.

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ENGLISH.

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(*Continued on page* 252.)

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Les Cinq Langues, "journal des langues allemande, anglaise, espagnole, française, italienne," which appears fortnightly from October 5 to July 20 (Paris Vuibert et Nony, Boulevard Saint-Germain, 63: 10 fr.), and is now in its ninth year, offers to polyglots varied and interesting opportunities of keeping up their linguistic practice. Each number represents all the five languages, and a supplement records what is going on in the educational world and suggests "devoirs."

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The Great Eastern Railway Company's *Tourist Guide to the Continent*, edited by Percy Lindley and well supplied with illustrations and maps, appears opportunely (6d.). It contains much useful information, judiciously selected and agreeably and clearly presented. There has been added to the present edition a brief but helpful "everyday vocabulary in French, German, and English." The booklet is nicely got up and handy.

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Murray's French Texts.—(1) La Vénus d'Ille, et La Dame de Pique (Mérimée); (2) Bug-Jargal (Hugo). Both edited by W. G. Hartog, M.A. Lond., Lecturer in French, University College, London. 1s. 6d. each.
[Biography, foot-notes, exercises. Full and careful.]

Oxford Higher French Series. Edited by Leon Delbos, M.A.—(1) Préface du "Cromwell" de Victor Hugo. Edited by Edmond Wahl, Professeur au Lycée Janson-de-Sailly. 2s. 6d. net. (2) Chansons Choisies de Béranger. Edited by Jean Edmond Mansion, B. ès L., Head Modern Language Master, Royal Belfast Academical Institution. 3s. 6d. net. Clarendon Press.

GERMAN.

Am Rhein: a German Story for Beginners. By Karl Wichman, Ph.D., Professor of German in the University of Birmingham. 2s. Swan Sonnenschein (Ora Maritima Series).
[Narrative illustrating everyday life and thought of the Germans. Text simple and idiomatic. Plan follows the idea of the series. Interesting and practical introduction to German.]

Colloquial German, Lessons in, by the Gouin Method. Part I. 1s. net. Kegan Paul, Trench, Trübner, & Co. (Modern Language Series, edited by A. Thouaille, M.A. Paris).
[Practical and attractive. Useful as collateral exercises, as well as independently.]

Heath's Modern Language Series.—(1) Johannes (tragedy, by Sudermann). Edited by F. G. G. Schmidt, Ph.D., Professor of Modern Languages, State University of Oregon. 1s. 6d. (2) Alltagliches: Ein Konversations- und Lesebuch. By M. B. Lambert, Boys' High School, Brooklyn, N.Y.
[(1) Biographical and literary introduction; brief, helpful notes. (2) Presents in simple German objects and incidents of the pupil's daily life in and out of school. Fragen, exercises for retranslation, vocabulary. Serviceable.]

Historical Reader, German. By J. E. Mallin, M.A., Assistant Master, Strand School, King's College, London. 2s. George Bell.
[Sketch of German history as elementary reader. Ample notes and full vocabulary; illustrations. Very good.]

Lesebuch, Deutsches Reform.—Herausgegeben von D. Ll. Savory, M.A., Dozenten an der Universitat London, Goldsmiths' College, früher Oberlehrer am Marlborough College, &c. 2s. 6d. Clarendon Press.
[Enthaltend dreiszig Erzahlungen aus der deutschen Geschichte; mit Fragen für Sprechübungen mit grammatischen Übungen und einem deutschen Wörterzeichnis. Mit Abbildungen. Readings brief; apparatus very full. Attractive and interesting.]

Poetry, German, A First Book of. Compiled and annotated by Walter Rippmann. 1s. 4d. Dent (Modern Language Series).
[Varied selection, classified. Anmerkungen.]

Rivingtons' Direct Method Elementary German Texts.—(1) Der Dachs auf Lichtmess (Riehl). (2) John Wells (Gerstacker; abridged). Both edited by D. Ll. Savory, M.A. 1s. 6d. each.
[Good reading; abundance of exercises.]

EDUCATION.

Architectural Education: a History of the Past and some Criticisms of the Present System, upon which are founded some suggestions for the Future, with particular reference to the position of the Universities. By Wilfred I. Travers, A.R.I.B.A. Harrison, Jehring, & Co.
[Much historical detail; some pointed criticism.].

Board of Education.—(1) Memorandum on Language Teaching in State-aided Secondary Schools in England. 1d.—(2) Regulations for the Preliminary Education of Elementary School Teachers (in force from August 1 in England, excluding Wales and Monmouthshire). Cd. 4628. 3d. Wyman.

L.C.C.—Accommodation and Attendance in Elementary Schools, for year ended March 31, 1908.

National Froebel Union.—(1) Regulations for Award of Certificates (in force from 1910). 4d.—(2) Child Attendant Association, affiliated to the National Froebel Union: Scheme for Certificates of Practical Fitness. Norwich House, Southampton Street, Bloomsbury, W.C.

MATHEMATICS.

16617. (M. T. NARANIENGAR, M.A.)—Prove that the vertices of the harmonic triangle of the Feuerbach quadrilateral lie on the sides of the pedal triangle.

Note by B. C. WALLIS, F.C.P., B.Sc. (Econ.).

In Gallatly's "The Nine Point Circle," Theorem 6, it is shown that the vertices occur at the respective intersections of the lines joining (i.) the mid-points of the sides, (ii.) the points of contact of the in-circle with the sides. The proposition does not follow.

16548. (SARADAKANTA GANGULI, M.A.)—The tangent plane at any point P of the surface $xyz = k$ meets the axes of co-ordinates at A, B, C. Show that P is the centre of inertia of the triangle ABC. Generally, the tangent plane at any point P of the surface $x^l y^m z^n = k$ meets the axes of co-ordinates at A, B, C. Show that P is the centre of mean position of the points A, B, C for the multiples l, m, n respectively. Prove also the converse of the general proposition.

Solution by A. M. NESBITT, M.A.

In the general case if (α, β, γ) be the co-ordinates of P, we have for the equation to the tangent plane at P,

$$x.lk/\alpha + y.mk/\beta + z.nk/\gamma = (l+m+n)\,k \quad \ldots\ldots\ldots\ldots (1),$$

so that $l.\mathrm{OA} = \alpha.\Sigma l$, $m.\mathrm{OB} = \beta.\Sigma l$, $n.\mathrm{OC} = \gamma.\Sigma l$; conditions which make α, β, γ the co-ordinates of the centre of inertia of masses l, m, n at A, B, C respectively. Conversely, being given these three conditions, we are led at once to the relation (1), which shows that ABC is the polar plane of (α, β, γ) with respect to $x^l y^m z^n = k$. But the centre of inertia of masses at A, B, C must lie in the plane ABC; so that the pole lies on its polar plane, and thus ABC touches the surface at the centre of inertia of these masses. Or we may argue that since equation (1) is clearly satisfied by (α, β, γ) the pole lies on its polar plane, &c.

16601. (R. F. DAVIS, M.A.)—If A, B, C are the angles of a triangle factorize:— $\cos^2 \mathrm{B} + \cos^2 \mathrm{C} + 2\cos 3\mathrm{A} \cos \mathrm{B} \cos \mathrm{C}$.

Solution by S. NARAYANAN, B.A., L.T.

Since $\cos^2 \mathrm{A} + \cos^2 \mathrm{B} + \cos^2 \mathrm{C} = 1 - 2\cos \mathrm{A} \cos \mathrm{B} \cos \mathrm{C}$,

we have
$$\begin{aligned}
&\cos^2 \mathrm{B} + \cos^2 \mathrm{C} + 2\cos 3\mathrm{A} \cos \mathrm{B} \cos \mathrm{C} \\
&= 1 - \cos^2 \mathrm{A} + 2\cos 3\mathrm{A} \cos \mathrm{B} \cos \mathrm{C} - 2\cos \mathrm{A} \cos \mathrm{B} \cos \mathrm{C} \\
&= \sin^2 \mathrm{A} + 2\cos \mathrm{B} \cos \mathrm{C} (\cos 3\mathrm{A} - \cos \mathrm{A}) \\
&= \sin^2 \mathrm{A} + 8\cos \mathrm{A} \cos \mathrm{B} \cos \mathrm{C} (\cos^2 \mathrm{A} - 1) \\
&= \sin^2 \mathrm{A} (1 - 8\cos \mathrm{A} \cos \mathrm{B} \cos \mathrm{C}).
\end{aligned}$$

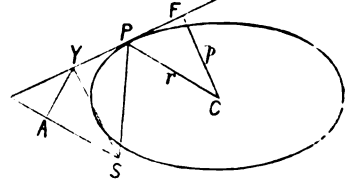
The PROPOSER's Solution is the following:—

Denoting $\cos \mathrm{A}$, $\cos \mathrm{B}$, $\cos \mathrm{C}$ by c_1, c_2, c_3, we require to factorize $c_2^2 + c_3^2 + 2c_2c_3(4c_1^3 - 3c_1)$, where $c_1^2 + c_2^2 + c_3^2 + 2c_1c_2c_3 = 1$.

$$\begin{aligned}
\text{Expression} &= c_2^2 + c_3^2 - 6c_1c_2c_3 + 8c_1^3c_2c_3 \\
&= c_2^2 + c_3^2 - 6c_1c_2c_3 + 8c_1c_2c_3(1 - c_2^2 - c_3^2 - 2c_1c_2c_3) \\
&= c_2^2 + c_3^2 + 2c_1c_2c_3 - 8c_1c_2c_3(c_2^2 + c_3^2) - 16c_1^2c_2^2c_3^2 \\
&= (c_2^2 + c_3^2 + 2c_1c_2c_3)(1 - 8c_1c_2c_3) \\
&= (1 - c_1^2)(1 - 8c_1c_2c_3) = \sin^2 \mathrm{A}(1 - 8\cos \mathrm{A} \cos \mathrm{B} \cos \mathrm{C}).
\end{aligned}$$

16540. (W. F. BEARD, M.A.)—Prove geometrically that the latus rectum of the parabola, which has closest contact with an ellipse at any point, varies inversely as the cube of the diameter through the point.

Solution by the PROPOSER.



Let P be any point on an ellipse, centre C; let S, A be the focus and vertex of the parabola having closest contact with the ellipse at P.

Draw $\mathrm{CF} (= p)$ and SY perpendicular to the tangent at P. Join AY, SP, $\mathrm{CP} (= r)$. Let the semi-diameter conjugate to $\mathrm{CP} = r_1$.

If two conics have contact of the third order, it is easily proved (by considering a case of double contact) that they have a common diameter through the point of contact. Hence CP is parallel to the axis of the parabola.

Thus $\angle \mathrm{SPY} = \angle \mathrm{CPF}$; therefore $\mathrm{SY}/\mathrm{SP} = p\,r$; but $\mathrm{SY}^2 = \mathrm{SA}.\mathrm{SP}$; therefore $\mathrm{SA} = p^2/r^2.\mathrm{SP}$.

But 4SP = chord of curvature at P of the parabola parallel to the axis, which is the same as the central chord of curvature at P for the ellipse $= 2r_1^2/r$; therefore $4\mathrm{SA} = (p^2/r^2).(2r_1^2/r) = 2a^2b^2/r^3$; because $pr_1 = ab$; therefore latus rectum varies inversely as the cube of the diameter through P.

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Algebraical Note in reply to a Correspondent.

On the Factorization of $a^8+2a^6b^2+3a^4b^4+2a^2b^6+b^8$, *and its application to the Factorization of* 6507601.

By CONSTANCE I. MARKS, B.A.

$$a^8+2a^6b^2+3a^4b^4+2a^2b^6+b^8 = (a^4+a^2b^2+b^4)^2$$
$$= [(a^2+b^2)^2-(ab)^2]^2$$
$$= [(a^2+b^2+ab)(a^2+b^2-ab)]^2.$$

Consider the factors of 6507601.

It is at once evident from the number of periods that the square root must be a number of 4 digits.

Its first digit is, by inspection, 2, and its unit digit will be either 1 or 9, since these are the only final digits which when squared will give a unit digit 1.

Now a little consideration shows that 6507601 lies between $(2550)^2$ and $(2560)^2$; therefore it must be either $(2551)^2$ or $(2559)^2$.

By trial, we find that

$$6507601 = (2551)^2 = \{(50)^2+1^2+50\times1\}^2,$$

or, expressing the result as a special case of the above algebraical formula, $6507601 = \{(\sqrt{50})^4+(\sqrt{1})^4+(\sqrt{50})^2(\sqrt{1})^2\}^2$.

Since a^2 is *not* a square number, it follows that the factorisation of 6507601 cannot be carried further without the introduction of factors which necessarily involve surds.

Note that 2551 is known to be *prime* from tables.

16586. (Professor NEUBERG.)—Intégrer l'équation

$$xyy''+xy'^2-yy'=0.$$

Solutions (I.) *by* G. N. WATSON, B.A.; (II.) *by* P. WERTHEIM, B.Sc., L.C.P., *and* S. NARAYANAN, B.A., L.T.

(I.) After dividing through by x^2, the equation may be written in the form $d/dx\,(yy'/x)=0$. On integration this becomes $yy'=c_1x$. Integrating again, $y^2=c_1x^2+c_2$, the complete primitive; c_1, c_2 being arbitrary constants. The differential equation is, accordingly, the differential equation of all conics whose axes coincide with the co-ordinate axes.

(II.) Since $d/dx\,(xy.dy/dx)=xy.d^2y/dx^2+y.dy/dx+x\,(dy/dx)^2$,

therefore given equation becomes

$$d/dx\,(xy.dy/dx)-2y.dy/dx=0 \quad\text{or}\quad d\,(xy.dy/dx)=2y\,dy;$$

whence, by integration, $xy.dy/dx=y^2+A$.

Separating the variables, we have

$$\int dy\,y/(y^2+A)=\int dx/x \quad\text{or}\quad y^2+A=Bx^2,$$

which is the required solution.

16626. (Professor E. HERNÁNDEZ.)—On donne un nombre composé de trois tranches de n chiffres, qu'à partir de la première tranche à droite sont trois nombres entiers consécutifs. On renverse les tranches, mais sans changer l'ordre de leurs chiffres. La différence entre ce nouveau nombre et le proposé est $2(10^{2n}-1)$.

Solution by JAMES BLAIKIE, M.A.

If we write x for the number of n digits, then the requir difference is $[(x+2)10^{2n}+(x+1)10^n+x]-[x.10^{2n}+(x+1)10^n+x+2] \quad 2(10^{2n}-1)$.

Ex.: $247246245-245246247 = 1999998 = 2(10^6-1)$.

16621. (Professor R. W. GENESE, M.A.)—To a passenger in a train, moving uniformly, a rope in a parallel plane appears on the window to rotate uniformly. Prove that it hangs in a catenary of equal strength.

Solution by A. H. S. GILLSON.

Let ψ be the angle which the tangent at any point of the curve makes with the axis of x, which is supposed horizontal. Then, if u be the uniform velocity of the train, $d\psi/dt=u.d\psi/dx=c$ (a constant). Hence $\psi=c/u.x+A$; so that the curve is a catenary of uniform strength.

Property of a Plane Figure.

By C. E. MCVICKER, M.A.

Let the point A_r have for co-ordinates in three dimensions (x_r,y_r,z_r), and consider the plane quadrilateral $A_1A_2A_3A_4$.

If area $A_2A_3A_4=m_1$, $A_3A_1A_4=m_2$, $A_1A_2A_4=m_3$, $A_3A_2A_1=m_4$,

we have $m_1+m_2+m_3=A_1A_2A_3=-m_4$;

therefore $\Sigma m=0$.

Obviously $x_4=(m_1x_1+m_2x_2+m_3x_3)/(m_1+m_2+m_3)$, ...;

thus Σm, Σmx, Σmy, Σmz all vanish .....(1).

If $P=(xyz)$ be any point in space

$$\Sigma m_rPA_r^2=\Sigma m_r[(x-x_r)^2+(y-y_r)^2+(z-z_r)^2] \quad (r=1,2,3,4),$$

which, by (1), is independent of (xyz), the position of P, and is therefore a constant depending on the measurements of the quadrilateral.

Now, let $A_1A_2A_3A_4$ be displaced bodily to any position $A_1'A_2'A_3'A_4'$, and it follows that $\Sigma m_rPA_r^2=\Sigma m_rPA_r'^2$ .....(2).

Choose P at the point common to the planes bisecting A_1A_1', A_2A_2', A_3A_3' at right angles; then $PA_1=PA_1'$, $PA_2=PA_2'$, $PA_3=PA_3'$, whence $PA_4=PA_4'$, by (2).

For a pentagon $PA_5=PA_5'$ (by using the quadrilateral $A_2A_3A_4A_5$), and so on.

Thus for any two positions of a plane lamina there is a point P such that $PA=PA'$ for all pairs of corresponding points A and A'.

It should be observed that there may possibly be right- and left-handed equality between the pyramids subtended at P, so that P is not a centre round which the lamina can always be rotated into its second position. In fact (as is well known) there is in general no such centre.

Note.—Other demonstrations of this curious property, which appears to have been noticed first by Professor Cayley, have been given by Professor Bromwich and Mr. James Blaikie, M.A., in the columns of *The Mathematical Gazette*.

16618. (T. E. LINDFIELD.)—If

$$\sin\theta=a\sin\phi/b \quad\text{and}\quad \cos\theta=c\cos\phi/d,$$

prove that $\sin(\theta+\phi)=\sqrt{[(b^2-a^2)(c^2-d^2)]}/(ad-bc)$

and $\cos(\theta+\phi)=(ac-bd)/(ad-bc)$.

Solutions (I.) *by* B. C. WALLIS, B.Sc., F.C.P.; (II.) *by* MANOHAR LAL; (III.) *by* F. G. W. BROWN, B.Sc., L.C.P., *and others*.

(I.) $\cos(\theta+\phi)\sin(\theta-\phi)=\sin\theta\cos\theta-\sin\phi\cos\phi$;

therefore $\cos(\theta+\phi)=(\sin\theta\cos\theta-\sin\phi\cos\phi)/(\sin\theta\cos\phi-\sin\phi\cos\theta)$.

Divide top and bottom by $\sin\phi\cos\phi$, and substitute

$$=(ac/bd-1)/(a/b-c/d)=(ac-bd)/(ad-bc),$$

the value for $\sin(\theta+\phi)$ follows at once.

(II.) Square and add the given equations for $\sin\theta$ and $\cos\theta$, and we have $1-c^2/d^2=(a^2/b^2-c^2/d^2)\sin^2\phi$ .....(i.)

therefore $\cos(\theta+\phi)=\cos\theta\cos\phi-\sin\theta\sin\phi$

$=(c/d)\cos^2\phi-(a/b)\sin^2\phi$ [from data]

$=c/d-(a/b+c/d)(d^2-c^2)/d^2\times b^2d^2/(a^2d^2-b^2c^2)$

$=c/d-(b/d)(d^2-c^2)/(ad-bc)$, [from (i.)]

$\cos(\theta+\phi)=(ca-bd)/(ad-bc)$.

Again, $\sin(\theta+\phi)=\sqrt{\{1-(ca-bd)^2/(ad-bc)^2\}}$

$=\sqrt{[(a^2d^2+b^2c^2-c^2a^2-b^2d^2)/(ad-bc)]}$

$=\sqrt{\{(c^2-d^2)(b^2-a^2)/(ad-bc)\}}$.

[Rest in *Reprint*.]

Algebraical Note in reply to a Correspondent.

On the Equation whose Roots are $\Sigma\alpha$, $\Sigma\alpha^3$, $\Sigma\alpha^5$, *where* α, β, γ *are the Roots of* $x^3-px^2+qx-r=0$.

By CONSTANCE I. MARKS, B.A.

Let α, β, γ be the roots of the cubic equation

$$x^3-px^2+qx-r=0.$$

Then $\Sigma\alpha=p$,

$\Sigma\alpha^3=p^3-3pq+3r$,

$\Sigma\alpha^5=p^5-5p^3q+5pq^2+5p^2r-5qr$

(*v.* Salmon, *Higher Algebra*, Tables of Symmetric Functions).

Hence, if the equation whose roots are $\Sigma\alpha$, $\Sigma\alpha^3$, $\Sigma\alpha^5$, be

$$x^3-Px^2+Qx-R=0,$$

we must have

$P=\Sigma\alpha+\Sigma\alpha^3+\Sigma\alpha^5$

$=p^5+p^3(1-5q)+5p^2r+p(1-3q+5q^2)+3r-5qr$,

$Q=\Sigma\alpha.\Sigma\alpha^3+\Sigma\alpha.\Sigma\alpha^5+\Sigma\alpha^3.\Sigma\alpha^5$

$=\Sigma\alpha.\Sigma\alpha^3+\Sigma\alpha^5(\Sigma\alpha+\Sigma\alpha^3)$

$=p^4-3p^2q+3pr+[p^3+p(1-3q)+3r][p^5-5p^3q+5pq^2+5p^2r-5qr]$

$=p^8+p^6(1-8q)+p^5(8r)+p^4(20q^2-5q+1)+p^3(-35qr+5r)$

$+p^2(5q^2-15q^3-3q+15r^2)+p(3r+30q^2r-5qr)-15qr^2$,

$R=\Sigma\alpha.\Sigma\alpha^3.\Sigma\alpha^5$

$=p(p^3-3pq+3r)(p^5-5p^3q+5p^2r+5pq^2-5qr)$

$=p^9-8p^7q+8p^6r+20p^5q^2-35p^4qr+p^3(15r^2-15q^3)+30p^2q^2r-15pqr^2$

$=p^9-8p^7q+8p^6r+20p^5q^2-35p^4qr+15p^3(r^2-q^3)+30p^2q^2r-15pqr^2$.

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11744. (R. W. D. Christie.)—No part being greater than 3, numbers of form $6N+M$ have $(3N+M)(N+1)$ partitions, if $M \neq 1 \neq 5$; but, if $M = 0$, unity must be added to the result. *E.g.*, the partitions of 17, no part being greater than 3. Here $N = 2$, $M = 5$; therefore there are 33 partitions.

Solution by H. Br.

If $P(r)$ be the required number of partitions of r, $P(r)$ consists of three groups:—(1) No part being greater than unity. The number of these is 1. (2) No part being greater than two, and at least one part equal to two. The number of these is $I(\frac{1}{2}r)$, where $I(p)$ denotes the integral part of p. (3) At least one part being 3. The number is obviously equal to the partitions of $r-3$, and is zero if $r < 3$. Therefore

$$P(r) = 1 + I(\tfrac{1}{2}r) + P(r-3) \quad \ldots\ldots\ldots\ldots\ldots\ldots (1).$$

Also
$$P(r-3) = 1 + I[\tfrac{1}{2}(r-3)] + P(r-6) \quad [\text{if } r \neq 6]$$
$$= -1 + I[\tfrac{1}{2}(r+1)] + P(r-6);$$

therefore $P(r) = I(\frac{1}{2}r) + I[\frac{1}{2}(r+1)] + P(r-6) = r + P(r-6)$ .....(2).

If $r = 0$, $P(0) = 1$. If $0 < r < 3$, $P(r) = 1 + I(\frac{1}{2}r) = r$, from (1). If r is 3, 4, or 5, $P(r) = r$, from (2). Therefore

$$P(r) = r, \text{ if } 0 < r < 6, \text{ and } = 1 \text{ if } r = 0 \quad \ldots\ldots\ldots\ldots (3).$$

If $r = 6N+M$, and $f(N)$ be written for $P(6N+M)$, we have, by repeated applications of (2),

$$P(r) = f(N) = 3N(N+1) + NM + f(0)$$
$$= (3N+M)(N+1) + P(M) - M \quad (M \text{ being } < 6)$$
$$= (3N+M)(N+1) \quad \text{if } M > 0$$
$$= (3N+M)(N+1)+1 \quad \text{if } M = 0 \Big\} \text{ by (3).}$$

and

16016. (C. E. Youngman, M.A.)—In a circle (O) an arc AB and its chord are trisected and the lines joining corresponding points of trisection meet at P. Prove that $\angle AOB = 3\angle APB$.

Note by Professor Sanjana, M.A.

In my Solution of this problem, p. 35 of Vol. xi., the process has been shortened by a trigonometrical formula; it is, however, capable of a wholly geometrical proof.

Produce ed to meet PA, PB in a, b respectively, and join Ad. As $AD = DE = EB$; therefore $ad = de = eb$. But $Ad = de = eB$; hence $Ad = ad$, so that $\angle Ade = 2\angle Aad$. But $\angle Ade = 2\angle Ode$: thus $\angle Ode = \angle Pad$, *i.e.*, Od and Pa are parallel. Therefore

$$\angle APN = \angle dON = \tfrac{1}{3}AON.$$

16625. ("λ, μ.") — Factorize the following polynomials for the values specified:—

(1) $4x^8+3x^7+7x^6+9x^5+6x^4+9x^3+7x^2+3x+4$ when $x = 17a^2$;

(2) $4x^6+3x^5+6x^4+x^3+6x^2+3x+4$ when $x = 13a^2$;

(3) $x^8-6x^7-x^6+3x^5+7x^4-5x^3-2x^2-3x+4$ when $x = 19a^2$;

(4) $4x^6-14x^5+5x^4+14x^3+5x^2-14x+4$ when $x = 2a^2$.

Solution by Lt.-Col. Allan Cunningham, R.E.

The four polynomials (say N_1, N_2, N_3, N_4) must be expressible in the form $N = Y^2 - qx.Z^2$, where $q = 17, 13, 19, 2$ respectively; and Y, Z are functions of x. Also Y, Z may be assumed to be symmetric functions in N_1, N_2, N_4, but not in N_3, (assumptions to be justified by the result).

(1) As to N_1, assume

$$N_1 = (2x^4 + Ax^3 + Bx^2 + Ax + 2)^2 - 17x(\alpha x^3 + \beta x^2 + \beta x + \alpha)^2.$$

Expanding Y, Z, and identifying term by term with the given N_1, four equations result for finding A, B, α, β,

$$4A - 17\alpha^2 = 3, \quad A^2 + 4B - 34\alpha\beta = 7, \quad 2AB + 4A - 17\beta^2 - 34\alpha\beta = 9,$$
$$B^2 + 2A + 8 - 34\alpha^2 - 34\beta^2 = 6.$$

After a few trials, these are found to be satisfied by

$$A = 5, \quad B = 4, \quad \alpha = \beta = 1;$$

whence $N_1 = (2x^4 + 5x^3 + 4x^2 + 5x + 2)^2 - 17x(x^3 + x^2 + x + 1)^2$.

(2) and (4). By a precisely similar process, it will be found that

$$N_2 = 4(x^3 + 2x^2 + 2x + 1)^2 - 13x(x^2 + x + 1)^2,$$
$$N_4 = (2x^3 - 3x^2 - 3x + 2)^2 - 2x(x^2 - 2x + 1)^2.$$

(3) As to N_3, in which Y, Z are non-symmetric, assume

$$N_3 = (x^4 + Ax^3 + Bx^2 + Cx + D)^2 - 19x(\alpha x^3 + \beta x^2 + \gamma x + \delta)^2.$$

By identifying this expression term by term with the given N_3, eight equations result for finding A, B, C, D, α, β, γ, δ. After a few trials it is found that $N_3 = (x^4 - 3x^3 - 5x^2 - 4x - 2)^2 - 19x(x^3 + x^2 + x + 1)^2$.

16615. (W. Austin Sleigh, B.A. Suggested by Question 15782.)—If K be the mid-point of the side BC of a triangle ABC, and I, I_1 the in-centre and ex-centre opposite A respectively, prove that

$$KI^2 + KI_1^2 = II_1^2 - \tfrac{1}{2}BC^2.$$

[*Note.*—As problems also bearing on Question 15782, Mr. Sleigh *communicates* the following:—(1) If I be the in-centre, I_1 the ex-centre opposite A of the triangle ABC, and P, K the mid-points of II_1 and BC respectively, prove that PK is perpendicular to BC; (2) Ex. 6, p. 52 of Richardson and Ramsey's *Modern Plane Geometry*.]

Solution by B. C. Wallis, B.Sc., F.C.P., *and others.*

By a well known theorem B, I, C, I_1 are concyclic with P as centre, whence BC is a chord; therefore PK is perpendicular to BC (note 1), also $KI^2 + KI_1^2 = 2KP^2 + 2PI^2 = 4PI^2 - 2CK^2 = II_1^2 - \frac{1}{2}BC^2$.

16209. (J. J. Barniville, B.A., I.C.S.)—Prove that

$$\frac{1}{1.3} + \frac{1.2}{3.7} + \frac{3.2^2}{7.17} + \frac{7.2^3}{17.41} + \ldots = 1,$$
$$\frac{1}{1.3} + \frac{2.2}{3.8} + \frac{5.2^2}{8.21} + \frac{13.2^3}{21.55} + \ldots = 1.$$

Additional Solution by James Blaikie, M.A.

Let
$$S = 1 + \frac{2}{3} + \frac{2^2}{7} + \frac{2^3}{17} + \frac{2^4}{41} + \ldots,$$
$$S - 1 = \frac{2}{3} + \frac{2^2}{7} + \frac{2^3}{17} + \frac{2^4}{41} + \ldots;$$

therefore, by subtraction,

$$1 = \frac{1}{3} + \frac{1.2}{3.7} + \frac{3.2^2}{7.17} + \frac{7.2^3}{17.41} + \ldots.$$

Let
$$S' = 1 + \frac{2}{3} + \frac{2^2}{8} + \frac{2^3}{21} + \frac{2^4}{55} + \ldots,$$
$$S' - 1 = \frac{2}{3} + \frac{2^2}{8} + \frac{2^3}{21} + \frac{2^4}{55} + \ldots;$$

therefore, by subtraction,

$$1 = \frac{1}{3} + \frac{2.2}{3.8} + \frac{5.2^2}{8.21} + \frac{13.2^3}{21.55} + \ldots.$$

QUESTIONS FOR SOLUTION.

16658. (A. M. Nesbitt, M.A.)—A man gambles with a die in the form of a prism with rounded ends, whose section is an equilateral triangle. The sides are marked respectively 1, 2, 3, and the man scores for each throw a number corresponding to the one which falls underneath. Prove that the chance he will score exactly n is

$$\tfrac{1}{2}\left\{1 + (-\tfrac{1}{3})^n\left(1 - \frac{x(x-1)}{1.2}2 + \frac{x\ldots(x-3)}{1.2.3.4}4 - \frac{x\ldots(x-5)}{1.2.3.4.5}8 + \ldots\right)\right\}.$$

16659. (S. Narayana Aiyar.)—Show that

$$\int_0^\infty \frac{\cos(\phi_a + \phi_b + \phi_c + \ldots + \phi_l) - \theta\sin(\phi_a + \phi_b + \phi_c + \ldots + \phi)}{\rho_a\rho_b\rho_c\ldots\rho_l}\frac{d\theta}{1+\theta^2} = \tfrac{1}{2}\pi,$$

where $\phi_a = \tan^{-1}\dfrac{ar\sin\theta}{1-ar\cos\theta}$, $\phi_b = \tan^{-1}\dfrac{br\sin\theta}{1-br\cos\theta}$, ...,

and $\rho_a = (1-2ar\cos\theta + a^2r^2)^{\frac{1}{2}}$, $\rho_b = (1-2br\cos\theta + b^2r^2)^{\frac{1}{2}}$, ...

16660. (S. Andrade.)—If d^nx/du^n be expressed in terms of

$$du/dx,\ d^2u/dx^2,\ \ldots,\ d^nu\,dx^n,$$

thus
$$d^nx/du^n = (-1)^{n+1}N/(du/dx)^{2n-1};$$

show (1) that the sum of the coefficients in $N = (n-1)!$, and (2) that if the values 1!, 2!, 3!, ..., $n!$ be substituted for

$$du/dx,\ d^2u/dx^2,\ \ldots,\ d^nu\,dx^n \text{ respectively,}$$

then N becomes $n!$.

16661. (L. Isserlis, B.A.)—When n is a positive integer, prove that

$$1 - \frac{2n-1}{2}\frac{1}{3} + \frac{(2n-1)(2n-3)}{2!\,2^2.5} - \frac{(2n-1)(2n-3)(2n-5)}{3!\,2^3.7} + \ldots = \frac{\pi}{2^{2n+1}}\frac{2n!}{n!\,n!},$$

and more generally, when the real part of n is greater than $-\frac{1}{2}$, and p is a positive integer, prove that

$$\frac{1}{2p+1} - \binom{n-\frac{1}{2}}{1}\frac{1}{2p+3} + \binom{n-\frac{1}{2}}{2}\frac{1}{2p+5} - \binom{n-\frac{1}{2}}{3}\frac{1}{2p+7} + \ldots$$
$$= 2^{-2p-1}\frac{2p!}{p!}\frac{\Gamma(\frac{1}{2})\,\Gamma(n+\frac{1}{2})}{\Gamma(n+p+1)},$$

where $\binom{m}{s}$ denotes $\dfrac{m(m-1)(m-2)\ldots(m-s+1)}{s!}$.

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16662. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Prove that, if

$$N'_r = (\tau'^6_r + 3^3.\upsilon'^6_r)/(\tau'^2_r + 3\upsilon'^2_r) = L'_r.M'_r,$$

and $$N_r = (\tau^6_r + 3^3.\upsilon^6_r)/(\tau^2_r + 3.\upsilon^2_r) = L_r.M_r,$$

where $$\tau'^2_r - 3\upsilon'^2_r = \overline{2} \quad \text{and} \quad \tau^2_r - 3\upsilon^2_r = +1,$$

with $\tau'_1 = 1$, $\upsilon' = 1$; $\tau_0 = 1$, $\upsilon_0 = 0$; then

$$M'_{r-1} = \tau_{2r-2} = L'_r, \quad M'_r = \tau_{2r} = L'_{r+1};$$

and $$M_{r-1} = \tfrac{1}{2}\tau_{2r-1} = L_r, \quad M_r = \tfrac{1}{2}\tau_{2r+1} = L_{r+1}.$$

Ex.—Factorise into prime factors N'_7 and N_7.

16663. (D. BIDDLE.)—Let N be the product of two known primes, each above 3. Then N, like them, is of form $6n \pm 1$. Let $N = 4r + p$, where p is a number of the same form as N, and, on being subtracted, leaves a remainder divisible by 4; this is for the avoidance of fractions later on. Let $4r = a^2 - b^2$, and $p = c^2 - d^2$, where $c = \frac{1}{2}(p+1)$, and $d = c - 1$. Then $N = a^2 - b^2 + c^2 - d^2 = (a^2 - d^2) - (b^2 - c^2)$. Show how to select p, so that the bracketed pairs of transposed squares may represent multiples of a factor of N. *Examples.*—$N_1 = 1843 = 97.19$. Take $p = 7$, then $4r = 2^2.3^3.17$, and we obtain

$$N_1 = 60^2 - 42^2 + 4^2 - 3^2 = (60^2 - 3^2) - (42^2 - 4^2),$$

where we have $60 - 3$ and $42 - 4$ both multiples of 19.

$$N_2 = 559 = 43.13.$$

Take $p = 7$, then $4r = 2^3.3.23$, and we obtain

$$N_2 = 29^2 - 17^2 + 4^2 - 3^2 = (29^2 - 3^2) - (17^2 - 4^2),$$

where $29 - 3$ and $17 - 4$ are multiples of 13.

16664. (R. F. DAVIS, M.A.)—The product of 76 and 83 is 6308. Were this product 6378 its digits would have been the same as those of its factors. Determine two two-figure numbers having this property.

16665. (Professor SANJÁNA, M.A.)—Take any rational number N, and let $N^{\frac{1}{2}}$ when reduced to a continued fraction have a recurring period of k quotients. Denoting the k-th, $2k$-th, ..., nk-th convergents by p_1/q_1, p_2/q_2, ..., p_n/q_n, prove that

$$p_n/q_n = [(q_{n-1}/p_{n-1}).N + p_1/q_1]/[(q_{n-1}/p_{n-1}).p_1/q_1 + 1].$$

16666. (Professor NEUBERG.)—Trouver le lieu du centre d'un hyperboloïde à une nappe, connaissant deux génératrices g, g' d'un même mode et un ou deux points du cône asymptote.

16667. (Professor COCHEZ.)—On donne deux droites fixes Ox et Δ. On prend un point variable M sur Δ et sur la bissectrice de l'angle xOM on porte une longueur $OP = \sqrt{(OM)}$. Lieu de P.

16668. (*Communicated by* C. M. Ross.)—Find the equation giving the points of inflexion of the plane unicursal cubic

$$x/(a_1, b_1, c_1, d_1 \nabla t, 1)^3 = y/(a_2, b_2, c_2, d_2 \nabla t, 1)^3 = z/(a_3, b_3, c_3, d_3 \nabla t, 1)^3.$$

16669. (C. E. M'VICKER, M.A.)—If X, Y are the foci of a variable conic touching four given straight lines, and F the focus of the parabola of the system; $FX.FY$ = constant.

16670. (Hon. G. R. DICK, M.A.)—Every conic passing through the in- and ex-centres of a triangle ABC is a rectangular hyperbola which always touches four fixed straight lines. The centres of all these hyperbolas lie on the circum-circle and their foci on the curve

$$X^{-1} + Y^{-1} + Z^{-1} = 0,$$

where $X = x(-x^2 \cos A + yz + zx \cos B + xy \cos C)$, $Y = \ldots$, $Z = \ldots$,

the co-ordinates being trilinear and the given triangle that of reference.

16671. (S. NARAYANAN, B.A., L.T.)—Show that the sides of triangles inscribed in a conic and having their orthocentres at a focus touch a fixed circle.

16672. (M. T. NARANIENGAR, M.A.)—Show that the trilinear co-ordinates of the Feuerbach point of the in-circle and the nine-point circle referred to the pedal triangle are

$$\sin \tfrac{1}{2}A \operatorname{cosec} \tfrac{1}{2}(B-C), \quad \sin \tfrac{1}{2}B \operatorname{cosec} \tfrac{1}{2}(C-A), \quad \sin \tfrac{1}{2}C \operatorname{cosec} \tfrac{1}{2}(A-B).$$

16673. (I. ABRAHAMSON.)—Prove that the radical axis of the in-circle of a triangle, and the nine-point circle of the triangle formed by joining the points of contact of the in-circle, is the straight line bisecting the diagonals of the complete quadrilateral, formed by the pedal triangle and the radical axis of the circum- and nine-point circles of the original triangle.

16674. (Professor NANSON.)—Two triangles have equal bases and equal altitudes, and the base is not the smallest side in either triangle. Show, by dissection, that the areas are equal.

16675. (W. J. DOBBS, M.A.)—A circle is inscribed to a triangle ABC, touching its sides at D, E, F. P is any point in the side BC, and AP meets FE at Q. DQ meets the circle at R, and AR meets the circle at S. Prove that PS is the tangent at S.

16676. (Colonel R. L. HIPPISLEY, C.B., R.E.)—If

$$A_1 + A_2 + A_3 = 180°, \quad \theta_1 + \theta_2 + \theta_3 = 180°,$$

and $$\theta_1 - A_1 = x_1, \quad \theta_2 - A_2 = x_2, \quad \theta_3 - A_3 = x_3,$$

show that the equation

$$\Sigma\left[\{\sin\theta_2 \sin A_3 (k_2 \sin x_3 - k_1 \sin x_1) - \sin\theta_3 \sin A_2 (k_3 \sin x_1 - k_2 \sin x_2)\}\right.$$
$$\times \{k_2 \cos\theta_1 (k_1 \sin x_2 - k_3 \sin x_3)^2$$
$$\left. - k_3 k_1 \sin\theta_1 \sin x_1 (k_2 + k_1 \cos x_2 + k_3 \cos x_3)\}\right],$$

is reducible to $\Sigma(k_3 k_1 \sin\theta_1 \sin^2 x_1 \sin A_2 \sin A_3) = 0$,

where Σ means summing the three terms formed by cyclically changing the suffixes.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10840. (Professor Sir W. THOMSON, F.R.S.)—A cylindrical rod hangs down vertically so as to be partly above and partly below the surface of a liquid resting in a large vessel. Show that its apparent weight is equal to its weight in air increased by the (positive or negative) quantity by which the weight of the volume of liquid drawn up above the plane level exceeds the weight of a quantity of liquid equal in volume to the portion of the solid below the plane level. Alter the statement to suit cases in which the solid depresses the liquid. Explain, in accordance with Laplace's theory, the forces by which the equilibrium is maintained.

11434. (H. W. SEGAR.)—Show that the determinant of n rows of which the constituent of the r-th row and s-th column is

$$d^r[x^{\frac{1}{2}r+2s-2} J_r(\sqrt{x})]/dx^r$$
$$= [(n-1)!!/2^n].[x^{n(n-1)/2} J_0(\sqrt{x}) J_1(\sqrt{x}) J_2(\sqrt{x}) \ldots J_{n-1}(\sqrt{x})],$$

where $J_n(x)$ denotes Bessel's function of the n-th order, and $(n-1)!!$ denotes $1!\,2!\,3! \ldots (n-1)!$.

11582. (Professor MINCHIN, M.A.)—An elastic rod of length l has its ends, A and B, fixed (not tangentially) by two pins, the distance between which is c; prove that, if the rod forms n bays between A and B, the pressures on the pins are proportional to n^2, to which also the potential work of its stresses is proportional; moreover, whatever be the number of bays the terminal tangents make a constant angle with the line AB. [The circumstances of the rod depend on the (unique) value of the modulus k which satisfies the elliptic integral equation

$$2/E(k, \tfrac{1}{2}\pi) = (c + l) F(k, \tfrac{1}{2}\pi).]$$

11898. (Professor HUDSON, M.A.)—A cricket ball, of mass m, being supposed to move with uniform velocity in a horizontal plane, occupies t seconds in traversing the distance, 22 yards, from the bowler to the batsman; (1) find in what direction it must be hit, so as to go off with equal velocity in a direction at right angles to that in which it first moves; and (2) give a numerical measure of the blow, supposing $m = 5\frac{1}{2}$ oz., $t = 5\frac{1}{2}$.

11922. (Professor SYLVESTER.)—If the equation

$$(a, b, c, c, b, a)(x, y)^3 = 0$$

has two equal roots and no more, show that it may be transformed by linear substitutions into one or the other of the two following forms, viz., $u^3v^2 + u^2v^3 = 0$ or $-u^4v + u^3v^2 + u^2v^3 - uv^4 = 0$.

12472. (Professor LAMPE.)—Draw a circle round the focus of the ellipse $r = p/(1 + \epsilon\cos\phi)$ as centre, so as to make the arc AB of the circle within the ellipse a maximum. The angle ϕ will be a root of the equation $\sin\phi + \cos\phi - 1/\epsilon = 0$. For instance,

$$\epsilon = 1/\sqrt{2}, \quad \phi = 60° 48' 3''.$$

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Road, West Kensington, W.

Vol. XV. (New Series) of the "Mathematical Reprint" is now ready, and may be had of the Publisher, FRANCIS HODGSON, *89 Farringdon Street, E.C. Price to Subscribers, 5s.; to Non-Subscribers, 6s. 6d.*

THE LONDON MATHEMATICAL SOCIETY.

Thursday, May 13th, 1909.—Sir W. D. Niven, President, in the Chair.

The Vicomte Robert de Montessus de Ballore was elected a member.

Mr. H. B. Heywood was admitted into the Society.

The following papers were communicated:—

"Ternary Quadratic Types," Mr H. W. Turnbull.

"On Gauss's Theorem, and on the Semi-Convergence of certain Force Integrals in the Theory of Attractions," Dr. J. G. Leathem.

"On the Continuity or Discontinuity of a Function defined by an Infinite Product," Mr. J. E. Littlewood.

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GENERAL MEETING.

The Half-Yearly General Meeting of the Members of the Corporation will be held at the College, Bloomsbury Square, W.C., on Saturday, the 17th of July, 1909, at 3 p.m.

LECTURES FOR TEACHERS.

On Thursday, 30th of September, JOHN ADAMS, M.A., B.Sc., F.C.P., Professor of Education in the University of London, will commence a Course of Twelve Lectures on

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The Fee for the Course is Half-a-Guinea.

Members of the College have free admission to this Course.

EXAMINATIONS.

Diplomas.—The next Examination of Teachers for the Diplomas of the College will commence on the 30th of August, 1909.

Practical Examination for Certificates of Ability to Teach.—The next Practical Examination will be held in October, 1909.

Certificate Examinations.—The Christmas Examination for Certificates will commence on the 7th of December, 1909.

Lower Forms Examinations.—The Christmas Examination will commence on the 7th of December, 1909.

Professional Preliminary Examinations.—These Examinations are held in March and September. The Autumn Examination in 1909 will commence on the 7th of September.

Inspection and Examination of Schools.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

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The Educational Times.

Education in Japan.

THE publication of the substance of the lectures delivered two years ago by Baron Dairoku Kikuchi under the Martin White Benefaction in the University of London (5s. net, John Murray) affords complete and authoritative information upon the subject of Japanese education. The author is President and Honorary Professor of the Imperial University of Tokyo, and previously he was for some time Minister of Education in Japan; and he is familiar with the educational systems of the Western world. The volume is of the most comprehensive character: it furnishes an epitome of Japanese history (especially as bearing upon the educational developments), sketches the administrative system, explains the position of women in the home and in society and in relation to the State, and expounds the organization and methods adopted in all the different classes of colleges and schools, with a final chapter upon home education. Recent events in the East have drawn special attention to the influence of early training upon the character of the Japanese people; and the explanations expressly stated or merely indicated by Baron Kikuchi will be found alike interesting and instructive.

The historical chapters are particularly impressive. They bring home to the reader effectively the immense force of a long national tradition. To the Western world Japan appeared to spring suddenly into existence some forty years back, in 1868. This, however, was but the new era, the Restoration of *Meiji*, or "The Enlightened Government," when the Shogunate came to an end, after seven hundred years of rule, and the whole country was brought immediately under the sway of the Emperor. But the Empire goes back to B.C. 660, and the present Emperor can boast of an unbroken line of descent from the first Emperor, Jimmu. "This unique character of our Imperial dynasty," says Baron Kikuchi, "together with the fact that all Japanese (with the insignificant exception of the subjugated aborigines and naturalized Coreans and Chinese) are regarded as descended either from the Imperial family or from those who came over with it from the Taka-Ma-ga-Hara [literally, Plain of High Heaven], may be said to constitute the fundamental character of our nationality as distinguished from other nations. Our nation is, as it were, one family, of which the Emperor is the head or patriarch, and this relation has subsisted from the first foundation of our Empire down to the present time." Hence the singular solidarity of ruler and people; and a like relation has been maintained between head and members of a feudal house, and between the head of an ordinary "house" (in the wide sense) and its members. Every Japanese has in his blood an inborn reverence for the ancestral ideal embodied in "house"-head, lord, and Emperor. The present is lived under the vivid presence and influence of the past; the new is permeated by the old with all the efficiency of a national ideal that is at the same time a religion.

The object of Japanese education is "to prepare boys and girls, young men and women, for their future life"—a life, in whatever sphere or mode, devoted to the national ideal. "Education is considered one of the most important functions of the State, and is therefore entirely under State control"; but "the educational system is not determined by laws which have to pass through the Diet, but by Imperial Ordinances, which are issued by the Emperor on the recommendation of the Cabinet, after being submitted to the Privy Council," though certain administrative matters require to be sanctioned by laws. The basis of the whole teaching is laid down in the Imperial Rescript on Education, issued on October 30, 1890:—

> Our Imperial Ancestors have founded our Empire on a basis broad and everlasting, and have deeply and firmly implanted virtue; Our subjects, ever united in loyalty and filial piety, have from generation to generation illustrated the beauty of it. This is the glory of the fundamental character of Our Empire, and herein also lies the source of our education. Ye, Our subjects, be filial to your parents, affectionate to your brothers and sisters; as husbands and wives be harmonious, as friends true; bear yourselves in modesty and moderation; extend your benevolence to all; pursue learning and cultivate arts, and thereby develop intellectual faculties and perfect moral powers; furthermore, advance public good and promote common interests; always respect the Constitution and observe the laws; should emergency arise, offer yourselves courageously to the State; and thus guard and maintain the prosperity of Our Imperial Throne coeval with heaven and earth. So shall ye not only be our good and faithful subjects, but render illustrious the best traditions of your forefathers.

Those of us that are concerned for the propagation of the Imperial idea may find here a useful example of dignified, serious, and touching appeal.

It is obviously impossible to follow the detail of the

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various grades of educational work: this must be sought in Baron Kikuchi's volume. Throughout the whole system the most vigilant and laborious care is taken to ascertain the best ways of doing things and to carry them into operation. The aid of foreign example and of foreign instructors is freely invoked, but governed in application by keen regard to Japanese circumstances. The fifth article of "The Imperial Oath of Five Articles" (April 6, 1868), setting out the future Imperial policy, runs: "Knowledge shall be sought for throughout the world, so that the welfare of the Empire may be promoted." Though Occidental knowledge, mainly through Dutch, had been encouraged early in the eighteenth century, yet less than a dozen years before 1868 Baron Kikuchi's grandfather, Dr. Mitsukuri Genpo, who was a medical doctor of a Dutch University and a Professor of Dutch in the academy that developed in 1857 into the Imperial University of Tokyo, suffered threats of assassination for teaching the foreign learning. Now Japanese youths flock to all the great educational centres of the West. English, "being, as it were, the common language of the East," is taught in elementary schools where Local Authorities think fit, and it is prominent, in spite of its intrinsic difficulties and the scarcity of teachers, in the middle schools and in the colleges, though French and German are usually admissible alternatives. Even Western melodies have been introduced, "and now you will hear children singing in Occidental fashion in every village." English and American games have been added to the repertory of gymnastic teaching; but baseball has caught on more successfully than cricket. "We are still learning and investigating," says Baron Kikuchi; "there are many questions which we have to solve, many improvements which we have to attempt. We shall not take any one country as our model: we have tried, and we are trying, to find out good and bad points of different systems, that we might know how to introduce and adapt the good to our use and avoid the bad."

With a comprehensive control of education by the Government, there is but limited scope for the private school. Still, private schools are in some cases officially recognized as substitutes, and in other cases special permission may be given to pursue education at home or elsewhere by certain Local Authorities. Otherwise there can be no private school. "This will explain why there are so few private elementary schools, viz., 249 out of a total of 27,269 (in 1906), of which some 50 were substitute schools: it is noteworthy that out of this number 166, or two-thirds, were in Tokyo, about 40 being substitute schools." There is, however, an increasing desire for preparatory schools for secondary education better fitted for the purpose than the ordinary elementary school. This fact is significant for educational legislators and administrators elsewhere than in Japan.

NOTES.

THE Birthday Honours list contains a rather unusual proportion of names associated with educational and literary work. One actually gets into the highest class: Mr. James Stuart, LL.D., M.P., who was for a long time Professor of Mechanics at Cambridge and was one of the original moving spirits of the University Extension system, is made a Privy Councillor. General Sir W. F. Butler, besides being a distinguished soldier, has been a prolific and interesting writer: he is made an Irish Privy Councillor. Sir Dyce Duckworth, an eminent physician and a member of Liverpool University Court, Mr. H. H. Longman, of the time-honoured publishing house, and Mr. Henry Morris, President of the Royal College of Surgeons and author of many medical works, become Baronets. Knights are more numerous: Mr. Thomas A. Bramsdon, M.P., has been Chairman of the School Board of Portsmouth; Mr. J. H. Yoxall, has been schoolmaster, President and Secretary of the N.U.T., a Royal Commissioner on Secondary Education, and a novelist of some piquancy; Professor Dill, of Queen's College, Belfast, was previously High Master of Manchester Grammar School (1877–88), and has distinguished himself greatly as social historian of the Roman Empire; Mr. Francis Galton, a grandson of Dr. Erasmus Darwin, has done much original work in anthropology and in the exploration of heredity, and is the founder of the science of Eugenics; Prof. Larmor, Secretary of the Royal Society, long ago made his mark in mathematical studies; Dr. T. E. Thorpe has written much on Chemistry and is Director of Government Laboratories; Dr. F. J. Campbell is the energetic Principal of the Royal Normal College and Academy of Music for the Blind at Norwood; the Press is represented by Dr. Stuart, Mr. John Duncan, Mr. G. A. Riddell, Mr. H. W. Lucy, Dr. T. Carlaw Martin, and Mr. Edwin Pears; the drama is honoured in Mr. A. W. Pinero and Mr. H. Beerbohm Tree; and economics in Mr. R. H. Inglis Palgrave, the editor of the "Dictionary of Political Economy." As usual, one misses names that might have been expected equally with some that find a place in the list: probably their owners are lacking in pushfulness. 'Twas ever thus, and ever will be. How much does it really matter?

THE vitality of the question of a Teachers' Register is once more certified by the fresh suggestion and the keen discussion at the recent meeting of the Assistant Masters at Cambridge. The most outstanding suggestion is the proposal of sub-registers or schedules, each sub-register to contain the names of teachers qualified to teach in some one type of school, and to "provide, by reference to schedules, for the proper differentiation of teachers in respect of attainments, training, and experience." In this way every teacher would be admissible, originally or by transfer, to as many sub-registers and schedules as his qualifications might warrant. Certainly, as the Chairman said, the scheme "looks perilously like the old Register." If it is not a construction of "cast-iron compartments," still there are compartments, and it remains to be seen whether the new flexibility will remove the old objection. There is also an old difficulty on the other side of the arena. It would be well to give attention to one of the practical aspects—the question of cost, which obtruded itself so remorselessly in the earlier stage of registration. If there is, first of all, a comprehensive register containing the names of all teachers, with reference numbers directing the reader to the sub-registers and schedules for each teacher's qualifications, there must be a repetition of names, often more than

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once, in the sub-registers and schedules—or at least a repetition of numbers, which would hardly be satisfactory and would probably in the long run prove little less onerous than the repetition of names; and thus the scheme would seem to run perilously in the direction of a duplication of expense. The proposal is not a final expression of opinion on the part of the Association, but the discussion of it may be expected to furnish useful guidance.

At the annual dinner of King's College was raised once more the familiar lament over the exiguous resources of the higher education in London and the inadequate appreciation shown by the Treasury for the needs of the Metropolis in comparison with the provinces and the Celtic fringes. The complaint is only too well grounded. At the same time, it is quite reasonable that London should provide largely for its own needs; and it may well be doubted whether wealthy citizens of London would be so very much more backward than wealthy citizens of other municipalities if they were only approached in the right way. At any rate, what seems to be wanted is a leader—a good sturdy beggar, unashamed to speak up for the claims of the University, and fortified with a winning and a persistent way of asking. The great City Companies have certainly been most generous; the County Council contributes very largely to education in one form or another, if not so very handsomely to University education. Bristol is proposing to devote a penny rate to its new University: the same rate in London is calculated to produce £186,000—a sum that could be quite easily utilized. Still, such a rate in London would bear too hard upon a vast population that would not profit so directly as to justify it. Have we not already recalled the dismissal of the President of a great American University because he had failed to gather in more than a million dollars in the current year? This businesslike example should be pondered. And the Treasury, though sorely tried, may usefully remember John Knox's dictum, that "every scholar made is an addition to the wealth of the community."

The centenary celebrations at Cambridge in commemoration of Darwin brought together delegates representing science in all the foremost intellectual centres of the world. It is very suggestive to reflect on what is implied in the statement of the Chancellor that he remembered the uncomfortable stir that was caused by the publication of "The Origin of Species," but that Cambridge had followed Darwin's lead successfully, and hoped to carry the enterprise still further, for it was proposed to found a new Chair of Genetics, a study that is peculiarly associated with Darwin's name. Mr. Balfour, in a remarkably appreciative speech, expressed the universal opinion of instructed persons when he said that the discoveries of the great scientist would remain as perpetual landmarks in the intellectual history of mankind: he had imprinted his signature on the whole development of future thought. Mr. Balfour also most properly pointed out that Darwin's scientific work apart altogether from the generalization of the origin of species would suffice to rank him as one of the most remarkable investigators the world had ever seen. The appreciations delivered by eminent men of science of various nationalities formed a specially interesting and impressive portion of the ceremonies. Cambridge has honoured herself in honouring so handsomely one of her most eminent sons.

A quarter of a century has now passed since the establishment of the Mediæval and Modern Language Tripos at Cambridge. The growth of the modern language school that furnishes the candidates has naturally been very gradual, but probably has by no means disappointed reasonable expectations. Valuable as the results have been, they afford no adequate measure of the strenuous efforts of Dr. Breul and Dr. Braunholz—notably of Dr. Breul. We are glad, therefore, to see that a score of the most eminent professors of modern languages in Germany have seized the occasion of the semi-jubilee of the appointment of Drs. Breul and Braunholz to call attention to the work these have accomplished and to the present conditions of modern language study at Cambridge. They express a feeling of regret "that, after the long period of probation through which the modern language school has passed with such signal success, there has been so little advance in proportion in the official recognition of the status of German and French." "The two lectureships of 1884 were converted in 1899 to Readerships in Germanic and Romance, but Cambridge is still without full professorships in these subjects, and still denies to modern languages the status that is undoubtedly due to them to-day." There will scarcely be any dissent from the opinion that the Readers ought to be elevated to the dignity of Professors. The difficulty will no doubt lie in the eternal want of pence, which vexes Cambridge—and all the other Universities of this world. Why the dignity should not be conferred, pence or no pence, is one of those puzzles that no outsider can understand. Anyhow, we rejoice to note this appreciation of Drs. Breul and Braunholz by their German colleagues, and we hope that something will promptly be done to satisfy the aspiration that these have so opportunely expressed.

The amount devoted to scholarships by the London County Council this year, though somewhat lower than in some previous years, still reaches the very large figure of £263,080. The considerations kept in view by the Higher Education Sub-Committee in working out the scheme are well worth repeating:

> That, as far as possible, no child or young person shall be debarred by poverty from obtaining the kind of education which will prepare him for the career for which his talents and character befit him; and that the pecuniary emoluments attaching to the scholarships should be sufficient to enable students to obtain the kind of education, whether industrial, scientific, or literary, which is best suited to their needs and capacities, but not sufficient to induce them to undertake a particular course of study with the object of securing the pecuniary advantages attaching to the scholarship.

These principles are alike generous and discriminating. It is also worth remark that the number of junior scholarships awarded to boys and to girls are to be approximately equal. So many girls nowadays have to make their way independently that it would be obviously unfair not to provide them with an equal chance. It is to be hoped that somebody is keeping statistics of the results of the operation of this large educational scheme: they ought to be very useful in confirmation or in check of the method of administration.

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SUMMARY OF THE MONTH.

THE London County Council Education Committee have decided that teachers who are Licentiates or Associates of the College of Preceptors shall be exempt from the necessity of passing the theoretical part of the examination for the Council's Physical Education Certificate. Teachers in the London service possessing either of these qualifications who have passed the practical part of the Council's Physical Education Examination, but not the theoretical part, should forward their College of Preceptors Certificates to the Council's Physical Education Organizer for their district for inspection.

THE Education Section of the British Association will assemble on Thursday, August 26, in the Senate House of the University of Manitoba under the presidency of the Rev. H. B. Gray, D.D., Warden of Bradfield. After the President's address, a discussion on Moral Instruction in Schools will be opened by Prof. L. P. Jacks, who will be followed by Mr. Hugh Richardson, and, it is hoped, by representatives of the American Association for the Advancement of Science. Friday, the 27th, will be given up to a discussion on Practical Work in the Schools, which will be opened on behalf of the Special Committee of the Section which is now considering the subject by Mr. W. M. Heller. Dr. C. W. Kimmins, Vice-President of the Section, will contribute some account of the London Trades' Schools. Mr. J. G. Legge is expected to speak on Practical Work in English Industrial Schools. Mr. W. Hewitt, Director of Technical Instruction in Liverpool, on Practical Work in Evening and Continuation Schools. Monday will probably be devoted to a joint Meeting with the Geographical Section of the Association on Practical Work in Geography Teaching. Prof. R. E. Dodge, of Columbia University, and Mr. G. G. Chisholm, of Edinburgh University, are expected to contribute papers. On Tuesday, the President of the Section will open a discussion on Education as a Preparation for Agricultural Life, with special reference to the public-school boy in Canada. In accordance with the practice of previous years, visits will be made in the afternoons to various institutions of educational interest in Winnipeg and neighbourhood.

MR. RUNCIMAN received a deputation from the National Education Association with reference to the recent circular dealing with school staffing. Mr. John Massie, M.P., said the deputation consisted of ladies and gentlemen of different creeds and political opinions, who had devoted themselves to education from the point of view of its efficiency only. They suggested that any Imperial grant should be ear-marked for building purposes, and could be extended over a series of years. The Rev. E. F. M. MacCarthy (Birmingham) declared it was quite impossible to get the best educational results out of children when the classes numbered sixty or more. Mr. G. L. Bruce said classes of sixty or seventy rendered useless a teacher's college training, which taught him to get into personal touch with every child in an elementary school. Mr. A. G. Harvey, M.P., asked for an extension of grant for specific purposes, and for an annual sum from the Exchequer ear-marked for the building of new schools. Before many months were over, he said, there would be furious demands from Local Authorities for a large sum from the taxes raised by the unearned increment.

Mr. Runciman said the points raised were all of the first magnitude, because he understood that the deputation wished to see a scheme embarked upon which would involve many millions over a period of not less than twelve years—possibly many millions per annum. The deputation's standard was so high that, were he to put forward all they suggested, whereas there was now apathy among Local Authorities, there would be positive revolt. With regard to provision for children under five, he could not, in the state of public opinion and the pressure of Local Authorities on the Exchequer, make such provision compulsory. He would like to see the elementary classes reduced far below the number he had put forward, but he could not press for that, and he must be satisfied with his small demand.

THE Annual Conference of the Association of Head Mistresses was held at the North London Collegiate School for Girls. the President, Mrs. Woodhouse (Clapham High School) in the chair. In her presidential address. Mrs. Woodhouse said that it was little short of a disaster that teachers could not to-day claim as a professional body their right to be registered or recognized. As units in the State they counted for nothing, were "entered" nowhere, had no official or professional status, did not belong to a fully accredited profession, and this notwithstanding the fact that they were alive to the great importance of registration, for which professional equipment was an essential. She did not, however, regard the labours of the seven years during which the Registration Council was in existence as wasted. The question of the status of the teacher had been continually before the public mind, as well as that of the efficiency of schools; the need and value of experience had been weighed; the relative values and equivalents of degrees had been under constant revision. The culmination of this experience was the fact that Associations, whether of Heads or Assistants, had made up their minds to have Registration. She urged the necessity for differentiation between the work of the future college girl, the pupil who would proceed either to a University or to a professional career, and the girl who would leave school to take up one of the varied lines of life, either in the home, or outside the more defined limits of what is called "Home Life." The course of Home Economics at King's College had given a strong lead on these lines.

THE following resolutions were carried:—

That this Conference disapproves of external examinations for girls under sixteen years of age, and invites all members of the Association to co-operate in discouraging pupils to enter for them.

That this Conference is of opinion that governing bodies should provide and, subject to parental consent, require medical inspection by a duly qualified doctor in the case of all children entering a public secondary school, and that provision should be made for re-inspection from time to time.

That the Board of Education be approached with a view to the modification of (1) Regulation 24 (*c*), whereby a grant of £2. 10s. is paid in place of £7. 10s., if the candidate does not pass in the Pupil Teacher Examination; and (2) of Regulation 33 (*b*), which makes the passing of a qualifying examination by a bursar a condition of the payment of the grant of £10 for the bursar's year of instruction in the secondary school.

That application be made to the chief University Examination Boards, the Board of Education, and the Local Authorities which give examinations in science for scholarships, to receive and consider the science syllabuses of typical secondary schools, and to set papers with a wide range of alternative questions in applied science in accordance with the movement to give courses in "home economics" in girls' schools, and other efforts to relate science teaching to life.

Resolutions were also carried by large majorities in favour of asking the Federal Council of Secondary School Associations, in conjunction with the National Union of Teachers and the Association of Teachers in Technical Institutes, to call a Convention for the discussion of the principles and methods of registration, and of referring to the Executive Committee the question of communicating with the Board of Education as to carrying into effect the provisions of the Act of Parliament with regard to the Teachers' Registration Council. Miss Burstall, M.A. (Manchester High School) was elected President for the years 1909–1911.

THE Twelfth Annual Conference of the National Association of Head Teachers was held at Leicester. The Association has now sixty-eight branches, with a total membership of five thousand. Mr. J. W. Iliffe, of Sheffield, the president, in the course of his address claimed that the time had come for a Royal Commission to investigate the curriculum and functions of the primary school. While not admitting that the existing system had failed, he pointed out that the conception of the purposes of the school had widened enormously of late years. Later, the Conference, on the motion of Mr. H. E. Storey, of Manchester, adopted a resolution strongly deprecating the repeated utterances in the public press and elsewhere casting serious reflections upon the education given in the primary schools of the country. The resolution declared that many of the reflections had little foundation in fact, and also stated that, though the curriculum was capable of improvement, the children of to-day were better behaved, and more intelligent, resourceful, and observant, than in the days of individual examination. The Conference declared itself in favour of the abolition of the half-time system, and the raising of the age of exemption to fourteen years. Among the resolutions passed was one in support of the teaching of domestic subjects to girls being made compulsory. Another expressed the opinion that the whole cost of training teachers should be borne as a rule by parents or guardians, and urged Local Education Authorities to provide from a portion of the money thus saved

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enough to make it possible for all poorer but clever and specially adapted children to enter the teaching profession. There was a lively discussion on the question whether women teachers should be allowed to continue teaching after marriage. A resolution affirming that they should was defeated by a large majority.

The National Association of Teachers of the Deaf points out that there too often occur cases of serious delay in the proper education of deaf children which might have been avoided if teachers and others interested in general education knew what to do in the matter. It sometimes happens that, unless a child is totally deaf, it is allowed to remain in the ordinary "hearing" schools, and thereby loses that special training which it requires and to which it is by law entitled. The Association, therefore, desires to point out, to teachers in elementary schools especially, that, in schools for the deaf, speech and speech-reading are now very generally taught, and that the course of training in articulation which a partially deaf child would receive in a good school for the deaf is exactly that form of training which is calculated to do him the greatest permanent good. Scores of children are kept away from schools for the deaf because those who come in contact with them say—"They are not deaf and dumb." Very many children who are born totally deaf are far from being dumb, owing to the excellent training they now receive on the oral system in schools for the deaf. And, for the children who have a good amount of hearing, but not sufficient to permit them to profit to the full by the instruction in public elementary schools, good oral training, special care in articulation training, and practice in making the eye assist the ear in understanding what is said, are calculated to produce the best possible results. Children also who can speak, but who become deaf from illness or other cause, require special training in lip-reading, and should not be allowed to remain in the ordinary classes for the hearing.

The Duke of Devonshire presided at Devonshire House over a meeting in support of the Trinity College (Cambridge) Mission in Camberwell. The Committee's appeal, he said, was much too moderate. Mr. S. H. Butcher, M.P., said it was a great gain to the Universities that the young men should not only strengthen and enlarge their minds but expand their sympathies. One thing essential to the success of such an undertaking as this was that the workers, and those among whom they worked, should understand each other better, a great deal of our social estrangement being due to mutual and extraordinary ignorance of each other among both rich and poor. State enterprises for social improvement were apt to become bits of soulless mechanism. By altering machinery they did not get at people's hearts. Some said that what was wanted in a poor district was not a mission, but a settlement. They should not, however, raise that sharp alternative; what they wanted was a mission and a settlement also to supplement its work. In the present case they had both. The Bishop of Woolwich said he did not know what the Church in South London would do without school and college missions. The Rev. M. S. Ware, Warden of the Mission, said that the parish in which they worked had a population of over 16,000. They were practically all poor, and the lives of the mothers especially were one continual strain.

The Rev. Dr. Montagu Butler, Master of Trinity College, Cambridge, presided at the annual meeting of students and friends of Livingstone College, Leyton. Dr. Charles Harford, the Principal, stated that 359 students had passed through the institution since its foundation, forty-one of whom had gone as missionaries to China. Great advances had been made in the department of tropical research, making it more and more possible for missionaries to combat the diseases of the tropics. The Master of Trinity spoke of the serious loss of life that occurred amongst missionaries through lack of medical training such as the College affords. Prof. Alexander Macalister expressed his opinion that the kind of knowledge taught at Livingstone College was that which every man who went off the beaten track as to climate ought to possess.

A striking example of the social progress that may be expected in Turkey under the new régime reaches us (says the *Times*) in the shape of a notice of a school which is to be started in Constantinople. The enterprise owes its inception to the well known scholar and poet, Tewfik Fikret Bey, for many years Professor of Turkish at Robert College, the founder of the *Tanin* newspaper, and now director of the Lyceum of Galata-Serai. "The New School," as it is to be called, will provide an essentially practical and liberal education for two hundred pupils, who will be admitted between the ages of ten and thirteen. "Civic instruction," according to the notice, "will be the pivot" of its entire system of education. To teach the rising generation its duties and social and political rights, and to obliterate the "unfortunate legacy of the past," will be its chief aim. It is a high tribute to the esteem in which the institutions of this country are held by enlightened Turks that English as well as Turkish will be used as a medium of instruction. Pupils will be required to study two other languages, the choice being between French, German, and the Slavonic tongues. Great stress is laid upon the practical study of commerce and agriculture. The fee will be £T85 per annum. It is intended to establish the school upon an estate of at least 100 acres. To meet this and other expenses it is estimated that a capital of £50,000 will eventually be needed. Ten per cent. of this capital must be subscribed before, under Ottoman law, the proposed limited liability company for the school can be officially recognized. The capital will be divided into 10,000 £5 shares at 4 per cent. The first £10,000 has already been promised in England. Mr. Allan Ramsay, late of the Ottoman Bank, and now representative of the Imperial Tobacco Company in Constantinople, is on the Organization Committee of the school. Subscriptions may be sent to and information demanded of Salih Kéramett Bey, "Dette Publique Ottomane," for Tewfik Fikret Bey, President of the Organization Committtee of "The New School," Constantinople.

The death is announced of Mr. Archibald Grant Munro, B.A., for the last twenty-seven years a master in the City of London School. Mr. Munro was born in 1855, and educated at Ecclesall College, Yorks, of which school his father was then head master. He proceeded to Queens' College, Cambridge, took his B.A. degree in 1880, and joined the staff of the City of London School in 1882, when the new buildings on the Thames Embankment were opened. Mr. Munro will be remembered by many generations of "old boys" as the enthusiastic and devoted organizer of their athletic clubs and games during the years before the school had acquired its playing field. He will, perhaps, be most gratefully remembered by the members of his Saturday Excursion Club. He used to conduct a large club of boys every Saturday for many years, either for a country ramble or on a visit to some building or institution of public interest. Mr. Munro was one of the founders, and for some time treasurer, of the Association of Assistant Masters. He was an ardent member of the Footpaths and Commons Preservation Society and the author of more than one descriptive handbook of the country round London and Rochester. He was also well known as a writer of serial stories for boys, most of which appeared in *Chums* and the *Boy's Own Paper*.

UNIVERSITIES AND COLLEGES.

Oxford.

The *Oxford Magazine* gives the following statistics about prize fellowships. The numbers refer, of course, to fellowships still held, not to all that have been given since the last Commission:—"As prize fellowships have been criticized of late as if they were a severe tax upon the resources of the Colleges, we have counted up all those Fellows elected after examination since the last Commission who are not employed in University or College teaching. The figures are: University, one; Merton, two; Magdalen, one; Brasenose, one; St. John's, two—so that seven is the total outside All Souls, at which College there appear to be thirteen. The grand total is, therefore, twenty, unless we insist upon adding two more on recent foundations unaffected by statute—viz., University, one; and Hertford, one. We must add that it must not be supposed (1) that all of these twenty or twenty-two are engaged in lucrative professions; (2) that all of them draw their stipend; (3) that none of them is engaged in research."

Cambridge.

(*From our own Correspondent.*)

The term is over and it is time for our annual stock-taking. An interesting item in our balance sheet is the report of the Teachers' Training Syndicate as to the doings of the Cambridge Day Training College. Of the 20 members of this organization who are in their third year, no fewer than 6 have taken first classes in a Tripos, 7 have taken seconds, and most of the others have graduated in honours. It must be remembered that these men have had to do their professional training at the same time as

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their Tripos preparation; the results are most satisfactory. It is by quiet work like this that Cambridge keeps in touch with the country. Vague speeches about cheapening University life go for little with practical men: there is no real difficulty in getting customers if you sell a good article. This is a banal argument, but it is one which the outside world understands—and upon which it acts. "All the students who left our College after three years' training in June, 1908, have obtained educational posts at an average stipend of £150 a year." This is common sense.

The exigencies of space prevent me from saying much about the results obtained in other spheres. At random, the case of the Agricultural Department. "The number of visitors to Burgoyne's farm (the experimental ground of the Department) was nearly 1,000. Parties came from the contributing counties, from Farmers' Clubs and Chambers of Agriculture. Deputations were received from Agricultural Colleges at Edinburgh, Glasgow, and Aberdeen, with a view to establishing similar farms at their respective institutions." From the Engineering Laboratory—Average number attending instruction, 244. Visits of students have been arranged to great works, to the Midland Railway locomotive works, and to the works of Messrs. John Brown, Limited, T. Firth, Limited, and Hadfields, Limited. In Experimental Physics the story is the same—Average number under instruction about 235, and so on all through the lists of of our scientific departments. Against all this we have to set the inevitable losses of a personal character which enhanced prestige indirectly causes. There is a constant drain caused by the greed of outside bodies for our best men. Prof. Sedgwick is the last and most conspicuous example. Fortunately, he has during the last 32 years trained a school of zoologists who will between them try and part his mantle if they cannot wear it.

The Syndicate on Alternatives for the General Examination have issued their regulations in order to carry out the changes sanctioned by the Senate. The result is somewhat confusing. It is not quite plain why certain changes are made. Regulation II. puts the case simply in the form that a Special may be taken as an alternative for the General. At present no one can take a Special before having passed the General, but it seems possible to take part of one Special with a part of another, and yet contrary to rule to take one part of the General and one part of a Special. But it is the May term, and there has been much going on. It is best to be merciful.

Through the beneficence of the late Mrs. Warre, a Research scholarship of the value of £200 is to be founded. Selection of the scholar is to be otherwise than by examination. The fetish of examination which reached us from China is gradually losing its hold on the affections of educationists. Judging candidates by examination marks is mainly in the interest of the selectors. "You might as well give an appointment to the man with most marks on his face," was a summary of the situation from the lips of a certain Cambridge man. And another fetish. The Master of Caius, in deprecating the fixing of an important professional examination for the festive season known as the May week: "They had sacrificed the convenience of the University and the interests of the candidates too long to the fetish of a big degree day in June." Yes; and the agglomeration of Triposes in the merry month of May, followed by a fortnight in June, originally devised for the purpose of saving men the expense of a tenth term, has reduced the price of a degree to a very much less extent than the value of the same.

A word about the examinations. The outside world thinks much about the Mathematical Tripos, and every man in the street knows that Trinity won the "blue ribbon of the year" through the efforts of Mr. Daniell. But there are other Triposes of which perhaps the outside world has not heard much, and of which it certainly thinks little—Classics, for example. In the First Division of Part I. Mr. J. R. M. Butler's name appears, as was expected. As places are not allotted, it is impossible to say who would have been Senior as under the old regulations, but we may hazard a guess. The first class in Science was of enormous proportions, but the standard is undoubtedly high, as the after careers of the candidates indisputably prove.

The special feature of this term was the Darwin Celebration, which at the time of writing is still in full swing. The reception at the Fitzwilliam Museum was an imposing sight. Delegates from all sorts and conditions of educational organizations in all quarters of the globe came together to do honour to the memory of the great scientist who learnt so little from Cambridge and taught Cambridge so much. The scene was quite unique. Academical robes of every hue and of varying splendour, wise men from the North, South, and West—few from the East—in gowns and uniforms and orders: even a descriptive reporter might have been forgiven for an allusion to a kaleidoscope. Mr. J. W. Clark and Prof. Seward had much responsibility, but earned much praise. The outstanding feature among the costumes was the academic robe of the Rector of the University of Bonn, the admiration of men and women alike.

The Wednesday's proceedings began with the presentation of addresses by the delegates in the Senate House, followed by a garden party at Christ's. Luckily, the weather was all that could be desired. The evening was devoted to a banquet in the new examination hall, followed by an "At Home" at Pembroke.

On Thursday, the *pièce de résistance* was the conferring of honorary degrees. Most interesting of all was the fact that Mr. Francis Darwin was one of the number—a position he has richly earned not only by hereditary claim, but by personal merit. With this the term came to an end.

The festivities of the May week proper were of unequalled extent—thirteen different balls were given on two nights, and all were successful. The week of the Races was signalized by one of the most successful of the whole series—that given by the Hawks' Club. This function has much to answer for, inasmuch as it brings to Cambridge many ladies who used in the old days to visit us only after the boat-racing was over. The example of the Hawks was followed by the Athenæum Club and the Old Rugbeian Society, and yet, in spite of all this, the numerous balls in the week proper were more popular than ever.

The success of Jesus in going head of the river was thoroughly well deserved, and much of the credit for this is due to the vigour and perseverance of that typical Cambridge rowing man, Mr. Stephen Fairbairn. Trinity Hall had a series of misfortunes, but Henley may show that there's life in the old place yet. First Trinity were far above the average of a college crew, but not good enough to displace Jesus. There probably never has been a time when there have been so many men nearly good enough to get their blues in cricket, football, and rowing. The cult of the "blue" may meet with many a scoff, but, if it means the disappearance of the loafer, who would weep?

Before these lines are in print Cambridge will be given over to desolation and the tourist.

London.

The London County Council Education Committee have adopted a report of the Higher Education Sub-Committee recommending that the following grants should be made (under certain conditions) to the Senate of the University of London with a view to the promotion of higher education in the schools of the University specified:—(1) University College, an equipment grant of £4,000 chargeable to maintenance account for the year 1909–10; and an equipment grant of £6,000 chargeable to either capital or maintenance account for the year 1910–11; (2) Bedford College, building grant of £5,000 a year for four years; (3) London School of Economics and Political Science, an equipment grant of £1,000. The Sub-Committee further recommended that, subject to the Council having the right to nominate students to fifty free places at both King's College and University College, to twenty-five free places at Bedford College, to forty free places at the London School of Economics and Political Science, and to fifty free places at the East London College, the undermentioned grants to the authorities of the institutions named be renewed for the educational year 1909–10:—University of London, £10,000; King's College, £1,500; University College, £1,500; Bedford College, £800; London School of Economics and Political Science, £1,200; and East London College, £1,000.

The new Institute of Physiology at University College was opened (June 18) by the Rt. Hon. R. B. Haldane, Secretary of State for War. "University College," writes the *British Medical Journal*, "may be said to be the cradle of model physiology in this country. There William Sharpey taught for nearly forty years. . . . To Sharpey's teaching it was mainly due that physiology gained its rightful place in medical education, and, directly or indirectly, he trained most British teachers of that science for many years. It was at University College that the practical teaching of physiology, begun by Michael Foster, was further developed by Burdon-Sanderson. These great men were afterwards the creators of the schools of physiology at Oxford and Cambridge. The foundation of a new Institute of Physiology carries on the tradition of University College, and gives to the teaching of physiology there vastly increased possibilities of development."

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The Foundation Oration at University College was delivered by Dr. H. A. Miers, Principal of the University. The subject was the "Revival of Learning"—not in some past century, but in the present—a revival of learning on the part of students, as distinct from teaching on the part of teachers. A weak feature of modern education was that so much was expected to be done by the teacher. The way in which students learned was more important than the way in which they were taught. Dr. Miers's trust was in the student. The duty of the teacher was to help the student to understand what he sees, and not merely to tell him what to look for. The students of to-day had the opportunity to initiate a great movement—the Twentieth Century revival of learning.

The Annual Assembly of Faculties at University College was held on Wednesday, June 30. The Right Hon. Lord Avebury presided. The winners of exhibitions, scholarships, studentships, and medals were presented to him, and he addressed the students and the members of the Faculties.

The speeches at the annual dinner of King's College, London, naturally dealt in the main with the incorporation of the College in the University of London and with the prospects of higher education in the metropolis. The Hon. W. F. D. Smith, M.P., the Treasurer, occupied the chair (in the absence of the Visitor, the Archbishop of Canterbury, who was unable to attend). He said that, before many months were over, incorporation with the University would, he hoped, be an accomplished fact. The idea of incorporation was entered on because they desired to assist, as far as they were able, in the development of University teaching in London; and he thought it was not unreasonable for them to say that King's College, during the whole period of its existence, had done much for the teaching of a University standard in this great city. He imagined that people hardly realized how small was the help the Government of this country gave to University education in London, or, for that matter, anywhere else; and, in the second place, they hardly realized how important for the good of the country University education always must be. With the exception of the City companies, who had generously supported University education in London, there were very few people who had followed the example that had been set in the provinces in this matter. In their own case they had been able, during the past few months, largely through the efforts of the Principal, to collect a large part of the sum required before the College could be incorporated in the University of London; but in respect of King's College School, which also had a heavy debt, the appeal had not been so successful, for of the £38,000 required to relieve it completely from debt, they had only been able to collect about £12,700. All who knew how closely the school had been connected with the College would regret that its development should be hampered by debt. The College was never doing better work than at the present moment.

The Principal (the Rev. Dr. Headlam), in responding, referred, amid cheers, to the immense services which had been rendered to the College by their Treasurer, and added that the College was in a better state than it had been for many years past. In the carrying out of the incorporation in the University they had solved a religious difficulty, enabling the Council to continue the work for which it was appointed, and also the secular portion of the College to be carried on without interfering with the religious liberty of staff or students. In addition to the difficulties of the situation with which they had had to deal, it must be remembered that the colleges were very badly endowed. Compared with the endowments given by the Treasury for University education in Scotland, Ireland, and Wales, the amount in proportion to the population given in this country was very insignificant. Whereas much was done for these other parts of the United Kingdom, very little was apparently done for England. This was a matter which deserved serious consideration, and he thought the members who represented London in Parliament might act together and inform the Chancellor of the Exchequer that they would not vote for the Budget unless he treated London properly. Everything made him believe that incorporation with the University was the right thing to do, and that it was their duty to try to build up for London a university which should have a real university life and feeling.

Regulations have been approved by the Senate for the award of the Ouseley Memorial Scholarships in 1909—scholarships founded by the Misses Ouseley in memory of their father, the late Colonel J. W. J. Ouseley, for the encouragement of the study of the Arabic, Persian, Hindustani, and other Oriental languages in this country. In the present year three scholarships of £50 each are offered. Candidates must either have pursued a course of study from October, 1908, to June, 1909, in the School of Oriental Studies either of University College or of King's College; or, in the case of their not having done so, undertake to pursue their studies for a year in one of these schools.

Miss Mary Taylor Fraser, B.Sc., has been appointed to the Lindley Studentship (£100), tenable in the Physiological Laboratory of the University.—Mr. G. Roche Lynch, St. Mary's Hospital Medical School, has been appointed to the University Studentship in Physiology (£50), tenable for one year in the Physiological Laboratory of the University or of a School of the University.—Miss Euphemia Ramsay, B.A. University College, has been appointed to the Gilchrist Studentship in Modern Languages (£80), awarded to enable the selected student to follow abroad a course of preparation for the profession of modern language teacher.

Queen's College, London.

THE Annual Report on Queen's College, Harley Street, presented by the Principal, the Rev. Canon Bell, M.A., showed the successful progress of the College, which has done yeoman service in the cause of the intellectual training of girls since its foundation more than sixty years ago. The College had sustained a great loss in the death of Prof. Seeley, whose work had been of inestimable value, while his position in the world of science made his place as Dean of the College of great importance. He extended a warm welcome to Miss Lewer, B.A., who had recently accepted the position of warden, made vacant by the much regretted resignation of Miss Harper, who, with rare self-abnegation, had offered to continue her work for the College as assistant to the Head Mistress, Miss M. D. Teale, an announcement that was greeted by the warm applause of the assembled girls. Special attention was being paid, continued the Principal, to physical development amongst the students, and the daily attendance at Swedish drill, which was compulsory except under a medical certificate, was much appreciated. This term an opportunity of learning swimming would be given, while through the winter hockey had been regularly played, though the difficulty of securing a proper playing ground was much felt. The intellectual honours gained by students, past and present, was a long and distinguished one; amongst others mentioned were Miss Milroy, who has just been appointed Head Mistress of Truro High School; Miss Una Griffin, who has won the scholarship of £180 per annum at the London School of Medicine, and Naomi Tribe, who has won one of £30 at the same school; while Miss M. Baxter has passed the London Matriculation. Contributions to the worlds of science and of books during the past year by old student were also appreciatively mentioned. The Bishop of London, as visitor, occupied the chair, and his address was listened to with eager attention.

Matriculation Interchange.

AN agreement allowing of an interchange of the Matriculation Certificates issued by the Joint Matriculation Board and the University of London respectively has been completed, and each party to the agreement will now proceed with the mutual recognition on the terms and conditions arranged. In each Examination system, there are certain obligatory subjects without which no Certificate is issued. In the London Matriculation Examination these obligatory subjects are English and Mathematics. In the Examination conducted by the Joint Board the obligatory subjects are either English Language or English Literature, English History, and Mathematics. Besides these obligatory subjects, each system requires that three other subjects should be taken, under stated conditions, from a schedule of subjects specified in the syllabus. In order to obtain recognition of the Certificate by both bodies, these three optional subjects must be chosen from the following list:—Greek, Latin, French, German, Mechanics, Chemistry, Geography. The further condition required by the Joint Board is that one of the subjects shall be a language. The conditions required by the University of London are—that one of the three subjects must be either Latin or a science; that, if Latin be not taken, one of the other subjects must be another language chosen from the list; and that the Certificate should state, in the case of each language taken, that the candidate has passed in "Unprepared Translation in lieu of Set Books." The conditions here recited are those which each body requires from its own candidates.

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THE EDUCATIONAL LADDER.

ABERDEEN UNIVERSITY.—Town Council Gold Medal: John McCulloch. McRobert Fellowship for Cancer Research: A. G. Anderson, M.B. Radstone Memorial Prize in Political Science: William Thomson, M.A. Hunter Gold Medal in Roman Law: J. C. McPherson; *proxime accessit*, James R. Park. Hutton Prize in Mental Philosophy and Bain Gold Medal: Lachlan McRae. Caithness Prize in History: R. N. Gilchrist.

BRADFIELD.—Foundation Scholarships, 90 guineas per annum: W. L. Mortimer (Mr. E. W. M. Lloyd's, Hartford House, Winchfield); W. H. Rowe-Williamson (Dr. A. E. Crawford's, St. Anselm's, Croydon); G. R. Daubeney (Mr. G. S. Chittenden's, Streete Court, Westgate-on-Sea). A fourth Scholarship was not awarded. Warden's Exhibition, 50 guineas per annum: T. W. Warlow (Messrs. Campbell and Reece's, Doon House School, Westgate-on-Sea). Simonds Exhibition, 45 guineas per annum: not awarded. General Exhibitions, 30 guineas per annum: (1) G. W. L. Day (Mr. W. H. P. Hayman's, Abbey School, Beckenham); (2) L. St. J. Mowbray (the Rev. H. C. V. Snowden's, Hildersham House School, St. Peter's, Broadstairs); (3) F. A. Stacpole (the Rev. H. C. L. Tindall's, Hurst Court, Ore, Sussex); (4) A. B. Clegg (the Rev. John Clegg's, The College, Lowestoft).

CAMBRIDGE UNIVERSITY.—The Mathematical Tripos list, Part I., shows 31 Wranglers, 20 Senior Optimes, and 26 Junior Optimes—in all, 77, to which are to be added 10 women candidates. Mr. P. J. Daniell, Trinity, is Senior Wrangler—the last of the line. In W. E. H. Berwick, Clare (4th Wrangler); A. W. H. Thompson, Trinity (4th); L. B. Benny, Christ's (16th); H. Freeman, Christ's (29th); and C. M. Ross, King's (68th), we are pleased to recognize contributors to our mathematical columns. There is but one woman that rises to the height of a Wrangler, Miss J. M. Mathews, Girton, who is placed between the 18th and 19th Wranglers; there are 2 Senior and 7 Junior Optimes. Three of the ten hail from Girton; the other seven from Newnham.—In Part II., Selig Brodetsky, bracketed Senior Wrangler last year, obtains but a second class; while Miss Marjorie Long (North London Collegiate School and Girton), equal to the Fourth Wrangler of last year, is placed (with two men) in Class I., Division 2.

Examination for the Diploma in Geography.—Part I.—Examined and approved: A. R. Griffiths, non-coll.; J. Jones; G. E. Joyce, Queens'; R. A. Leakey, Corpus; W. G. Points, non-coll.; G. H. Ridout, non-coll.; and H.A. S. Wortley, Downing. Part II.—Examined and approved: A. B. Griffiths, non-coll.; I. Jones; H. A. S. Wortley, Downing; Mabel Wynne.

CLIFTON.—Modern Language Scholarship, H. Herzl; Roquet Palmer-Palmer Scholarship, H. Herzl; Old Cliftonians' Scholarship, A. Evershed; The Junior School Scholarship, C. H. B. Kitchin; under 17, The Guthrie, A. B. Craddock; under 16 (increase), R. Francis; under 15, E. K. Wakeford, R. L. Farnell, and F. C. Phillpotts; under 14, G. A. Herdman; Mathematics and Classics, K. T. C. Gurney (Mr. Kitchener, Greenbank School, Liverpool); Modern Languages, G. W. E. Whitehead (Mr. McLaughlin, Newnham-on-Severn); Classics, T. R. Milford (Mr Carter, Maidenhead) and E. S. Blenkinsop (Mr. Radcliffe, East Grinstead); Classics and English, K. N. Crawford (Clifton College); Modern Languages, B. B. Edwards (Wykeham House, Worthing); Army Scholarship, M. H. Jones (Mr. Palmer, Eastbourne); The "C. F. Balfour" (Exhibitioner), J. L.Bermad (Mr. Lush, Rugby).

DUBLIN UNIVERSITY.—Fellowship: Henry Thrift, B.A. (Mathematics and Experimental Science). Madden Prize (£300, to the candidate second for the Fellowship): James C. Wasson (Mathematics and Ethics and Logic). Fellowship Prizes of £20 each: Rev. W. O'Connell and H. F. Biggs. Mathematical Scholarships: A. C. Davies, W. P. Hone, J. B. Browne, G. M. Kidd, J. K. Tully. Classical Scholarships: Henry Burd, Valentine Holmes, Joseph Johnson, Robert E. Russell, Richard W. Shegog, Edward Norton, W. O. Tobias. Experimental Science Scholarships: Lyndon E. Bastable, James W. O'Neill. Non-foundation Scholarships in Modern Literature: Kathleen H. Huggard, Olive Ross.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOARD.—*University College.*—Andrews Arts Scholarship (£30), G. Davis, University College School and Northern Polytechnic; Andrews Science Scholarship (£30), R. M. Clark, Southend Secondary School; West Scholarship in English and English History (£30), Hilda Fowlds, Lydney Secondary School. *King's College.*—Sambrooke Classics Exhibition (£50), J. Lodge, King's College; Clothworkers' Science Exhibitions (£30 for two years), W. Legg, King's College; (£20 for two years), B. E. C. Robinson, St. Paul's School. *East London College.*—Four Drapers' Company Science Scholarships for Men (£40 each for three years): J. Brimelow, Borden Grammar School; A. S. Wood, East Ham Technical College; W. Lowcock, Hampton Grammar School; A. E. R. Church, Leyton County High School. Two Drapers' Company Science Scholarships for Women (£40 each for three years): Alice S. Smart, City of London School for Girls; Winifred I. Willett, Battersea Polytechnic and Norwood Technical Institute. Two Drapers' Company Arts Scholarships for Men (£40 each for three years): J. W. Jones, Hastings Grammar School; S. H. Waters, Christ's Hospital.

MALVERN COLLEGE.—Entrance Scholarships—Senior: C. J. Jeffries, from Clare House, Beckenham (Classics and R. Faber Exhibition); R. W. M. Dewhurst, from Lindisfarne, Blackheath (Classics and Mathematics). House: C. L. Saul, from St. Christopher's, Eastbourne (Classics); E. Shaw, from Stancliffe, Matlock (Mathematics and Classics). Minor: P. G. Heath, from Naish House, Burnham (Classics); C. R. B. Mortimer, from St. Andrew's, Eastbourne (Classics); W. H. Lloyd, from Winchfield (Classics); J. E. M. Maw, from Stancliffe, Matlock (Classics and Mathematics); C. H. V. Cox, from Pelham House, Folkestone (Army side); C. S. Knight, from Thanet College, Margate (Mathematics).

OXFORD: ST. EDWARD'S SCHOOL.—Scholarships: E. A. P. Stonex (Elleray Park, Wallasey), G. L. Bird (Cathedral Choir School, Oxford), C. W. Bourne (Beech Lawn, Leamington). Exhibitions: C. P. Peach (Stanmore Park) and B. W. Ramsbottom (St. Cuthbert's, Malvern Link).

OXFORD UNIVERSITY.—Abbott Scholarship: William Whitaker Sweet-Escott, Exhibitioner of Magdalen; *proxime accessit*, B. C. Hamilton Nicholls, St. John's. Hertford Scholarship: Alexander Percival Waterfield, Scholar of Christ Church; *proxime accessit*, Edward N. A. Finlay, Scholar of Balliol: Honourably mentioned—Edgar Lobel, Scholar of Balliol; Roderick McKenzie, Scholar of Trinity; and Edward H. W. Meyerstein, Demy of Magdalen.

Christ Church.—Dixon Scholarship: W. Burridge. Fell Exhibition: E. H. McGrath. Boulter Exhibition: A. B. Vansittart. Holford Exhibition: H. B. Brady.

Queen's.—Open Scholarship: Cyril A. Wheeler. Fitzgerald Exhibition for natives of Middlesex: Geoffrey R. Sayer, Exhibitioner of the College, formerly of Highgate School.

REPTON.—Entrance Scholarships: E. P. K. Hough (Mr. Savery, Bramcote, Scarborough), N. F. Drummond (Mr. C. L. Wright, May Place, Malvern Wells), C. F. McLean (Mr. R. S. Lea, Lindley Lodge, Nuneaton), M. D. Colbourne (Army) (Mr. W. H. P. Hayman, The Abbey School, Beckenham), D. Hamlyn (Mr. A. M. Kilby, Lindisfarne, Blackheath), R. I. Musson (Mr. C. M. Henderson, the Grammar School, Clitheroe). To Exhibitions: F. H. Hodgson (Mr. J. R. Morgan, Connaught House, Weymouth), A. H. Goulty (Mr. H. Ashe, Wadham House, Hale, Cheshire), E. L. Hewitt (Mr. D. E. Norton, King's School, Bruton). Honorary Exhibition; A. F. Williams (Modern Languages) (Mr. J. Cyril Morgan-Brown, St. Edmund's School, Hindhead).

RUGBY.—Entrance Scholarships: G. M. A. Hobart-Hampden (Messrs. Wilkinson and Armes, Waynflete, Woodcote, Oxon.), J. W. Bowyer (Mr. E. W. M. Lloyd, Hartford House, Winchfield, Hants), H. W. House (Mr. P. Christopherson, Lockers Park, Hemel Hempstead), B. N. Rice (Mr. R. S. Lea, Lindley Lodge, Nuneaton), F. R. Dymond (Mr. J. G. Bradshaw, Packword Haugh, Hockley Heath), C. J. L. Lutyens (Messrs. Biddle and Barton, Rosary Gardens, South Kensington), F. Jones-Bateman (Mr. G. S. Chittenden, Streete Court, Westgate), E. M. Jenkins (Mr. J. G. Bradshaw, Packwood Haugh, Hockley Heath), F. C. O. Twist (Mr. R. S. Lea, Lindley Lodge, Nuneaton), W. W. Smith (Bowden College, Cheshire), T. T. H. Verschoyle (Rugby School).

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED., *E.T.*]

"HEAD MASTERS AND ASSISTANTS."

TOO MUCH LOWER FORM.

To the Editor of "The Educational Times."

SIR,—I was very much interested in the paper and discussion on the relation between Head Masters and Assistants published in the May issue. With many of the points raised it seems to me there can be no objection. With your permission, however, I should like to point out a side of one of the questions, which does not appear to have been raised—that with regard to the "loss of dignity in taking the work of a lower Form." I am speaking from experience when I say that, though undoubtedly this teaching is of great value, to confine oneself practically to it alone has its disadvantages. Though a Second Master of over four years' standing and a total experience of eight years, I have now to be content with teaching, for more than half the week, the lowest Form in the school. In no single subject do I teach any Form higher than that taking the Junior Certificate of one of the examining Boards, though previously I have taken my special subject throughout the whole school. The point I want specially to raise is that, situated as I am, I can never hope to claim to my credit any successes of the higher Forms. No higher work is placed in my hands, I have to be satisfied with laying the groundwork on which another master is to place the finished building—he gets all the credit for successes, I get all the blame for failures. It appears to me that there surely can be some remedy for this, and I should be very glad to hear of any solution arrived at in any other similar situation. I enclose my card, and am, Sir, &c.,

A SECOND MASTER.

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OPEN COURT.

Thay haif said . . .
Quhat say thay?—Lat thame say!

THE HUMANIZING OF MATHEMATICS.

By GUSTAV SPILLER.

THE proposals which I desire to make with regard to the humanizing of mathematics in school life follow the lines of a rapidly growing tradition. The days are passed when a sea of figures and symbols were almost the only things that met the eyes of the pupil; to-day hosts of concrete problems are proposed for solution. The nature of these problems, again, has suffered a sea change, for, on the one hand, problems derived from commerce and industry are being introduced in plenty, while, on the other, problems referring to health and to money-saving have been multiplied.

There are two new directions along which the advance must take place—first, that of *definite* problems, which acquaint the child with men so far as they are ethical and so far as they pass a cultured existence; and, secondly, that of *indefinite* problems, the object of which is to promote exactness in the thoughts and actions of common life. Furthermore, we suggest that love of mathematics and of exactness generally might be encouraged by the teacher's dwelling on the history of mathematics. Here all the marvels connected with that history could be presented to the minds of the children in the form of stories that should lighten and enliven the mathematical lesson.

I.

In the problems of this class moralizing and criticism should be as far as possible avoided. This demand is a reasonable one, since the examples will deal, as a rule, with what is intensely human and near to the heart of the child. Explanations might be wanted, but in these a sermonizing or critical tone should also be absent. A survey of the topics given below will show that we are only asking of the authors of mathematical manuals a wider outlook on life and a due consideration for that which is commonly regarded as of supreme importance—right conduct. That the latter of these aspects has been almost completely overlooked cannot be disputed.

(1) We deal first with income and expenditure. The number of hours worked, the kind of work engaged in, the intensity of application, the wages received, the character, health, strength, and peace derived from strenuous labour, and the advantage to society, to the nation, and to the world, and progress generally of such labour should be illustrated. The problems of unemployment through conditions of trade, absence of health, and idleness must be investigated. Overwork and underwork and their consequences should also be dealt with, as well as the raising of the value of work through physical, intellectual, æsthetic, and moral education. On the expenditure side an endless range of problems present themselves. The manner of expending the total annual, monthly, or weekly income in a reasonable way and the laying by a part of this should form by themselves an important department of arithmetic; expenses on altruistic purposes of a general order (perhaps one-fifteenth to one-tenth of the total income), on insurance of every type, excursions into the country, visits to museums, books, garden or flowers, pets; expenses for damaged, broken, and lost objects; assistance to relatives and friends, parents and grandparents, as well as public expenses on art, science, museums, parks, hospitals, lifeboats, lighthouses, &c.; the simple life might be illustrated by the fact that men have lived to a hale old age without luxuries or abundance of comforts.

(2) Here we come to a more abstract type of numerical example, which, however, should prove interesting and should not be difficult to find. Time and labour gained by punctuality and promptness in business and in public affairs; the general results of strenuous application; keeping things and thoughts in order; over how many obstacles courage, self-respect, self-control, or love of truth will carry us; what time and energy a devoted citizen gives to his locality and country; errands of mercy; how the day is spent; how long things last with care; time spent on lectures, books, excursions, sport, or meeting of friends; regular meals, quantities eaten, number of courses; baths; washing, brushing, and dressing oneself; gymnastic exercises and walks; use of too few or too many words; attention to plants and domestic animals; hygienic value of foods and drinks—such are some of the problems to be examined.

II.

In the previous section we indicated some of the sources whence ethical examples of a numerical order might be drawn. This section, on the contrary, seeks to infuse into the spirit of the pupil the habit of exactness and to destroy the notion that mathematics has nothing valuable to teach concerning that which cannot be stated in simple mathematical terms. We suggest, therefore, that a definite attempt should be made (1) to encourage numerical treatment of problems on every occasion; (2) to insist generally on exactness and on detecting the constituent factors in the problems of everyday life; and (3) to lead the students to examine and to generalize properly.

(1) The object here is to discourage unnecessary guessing by encouraging, even at the cost of some labour, mathematical treatment of all kinds of problems. Especially in work should size, quantity, number, proportion, position be determined partly or wholly through measurement, simplifying the problem to the utmost in each case. Here are a few general problems. How many children or how many boys and girls are there in the class or school? What is the number of benches in the class, and how long, broad, and high are they? How many pages are there in a copy-book or how many words are there on a page, a sheet, in a certain volume? How many pints could this vessel hold? How often do we eat, and how much? How many articles of clothing have we on? How often during the day did the baby kick, cry, smile, sit, roll, sleep, take food? How many branches and leaves has a certain tree, and how many petals, sepals, or seeds a certain flower? How old are the teachers, parents, pupils? In these and similar instances we ought to seek to determine the exact quantity or else at least to obtain an approximate numerical statement or an average based on all the material available, while we discourage random suppositions or vague words such as "much," "many," "often," "large," "long," "general," "far," "strong." In the secondary schools, more especially, the mathematical theory of probability should be applied to problems of social and ethical importance.

(2) In mathematical problems we deal with definite factors; but such definiteness is out of the question in daily experience. What we may, however, strive to accomplish is to be as exact as possible, and accordingly a nice sense of proportion and of probability should be cultivated in the mathematics class. We should encourage, without forgetting to provide at the same time experiences and cases, careful and repeated counting, observation, generalization, deduction, and verification. We should teach the young to take into account differences due to individual temperaments, education, capacities, and experiences, to peculiar situations, to the general environment, to the date or place of events, and to the stage of development. The children should learn to allow for complexity and interdependence in most problems, as well as for absence of complete knowledge. Such simple questions as—Why is he ill, well, hungry, thirsty, tired, unhappy, late? why is it cold, warm, snowing, raining? why does he love to study, to be with others? why do we want order in thoughts and actions, in home, school, street, and society?—should be discussed for the purpose of gradually enabling the pupil to see clearly as many sides as possible of a question and to give the mind a mathematical bent. The striving for precision would prevent rash generalizations regarding races, peoples, and epochs; it would also make an end to arbitrary and fantastic statements in matters of law and statistics, in the transmission of news, in accounts of life experiences, and in business transactions, and it would develop and cultivate the sense of truth in small as in great things, and that of consistency and reasonableness in thought and action. At the same time prejudice, laziness, slovenliness, and ignorance should be discouraged by encouraging the practice of the complementary virtues.

(3) In addition to aiding analysis, as in the above series of instances, the mathematics lesson should assist the systematization of knowledge. Pupils should be trained to find likeness and unlikeness on a large scale amounting to generalizations and discoveries of some magnitude. By putting together, for instance, all that is of a like nature we may obtain generalizations of a high degree, and by looking keenly for unlikeness we may find an unsuspected truth. In following this method we promote, as in Section (1), freedom from prejudice, desire for knowledge, and other valuable mental and moral qualities.

III.

Interest in the subject of mathematics should also be aroused and sustained by regular references to the wonderful progress

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made from the times when men could not even count up to five to our day, when most intricate problems are solved by mathematical procedure. Early customs, on the one hand, and the results of mathematical physics, on the other, should yield the required material. Such a view of mathematics would broaden the mind and strengthen the will to work.

The above scheme does not pretend to be exhaustive nor to replace the strong ethical influence already exerted by many mathematical teachers. If we have convinced the reader that the mathematics class should be, and could be, strongly developed in an ethical direction, the present proposal will have achieved its purpose.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on June 19. Present: Professor Adams (Vice President) in the chair, Dr. Armitage Smith, Mr. Bain, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Brown, Mr. E. A. Butler, Mr. Charles, Miss Dawes, Mr. Eve, Mr. Hawe, Mr. Kelland, Rev. R. Lee, Dr. Maples, Mr. Marx, Mr. Milne, Dr. Moody, Mr. Morgan, Mr. Pendlebury, Miss Punnett, Rev. Dr. Scott, Mr. Starbuck, Rev. J. Twentyman, and Mr. White.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the number of entries for the Midsummer Certificate and Lower Forms Examinations was about 4,570.

The Diploma of Associate was granted to Mr. J. Carruthers, who had satisfied the prescribed conditions.

An interim report of the Special Committee appointed "to consider whether by any methods the work and usefulness of the College may be increased" was submitted. The Committee had not been able to complete their consideration of important questions which had been raised in the course of the inquiry, and the Council decided to postpone their report to the members of the College till the General Meeting in January, 1910.

The representatives of the College on the Federal Council reported that it had been decided that arrangements should be made by the Federal Council for holding a Conference of Associations of Teachers in the autumn of this year for the purpose of securing agreement with regard to the constitution of a new Registration Council.

The draft Report of the Council to the General Meeting was considered, and was referred to the President, Vice-Presidents, and Dean for final revision.

A Special Committee was appointed to enquire into the circumstances in connexion with the refusal of the Board of Education to recognize as efficient a private school on the work of which the Board's inspectors had reported favourably.

Professor W. E. Dixon, M.A., M.D., was elected a member of the Council.

The following persons were elected members of the College:—

Mrs. A. J. Felkin, 39 Lexham Gardens, Kensington.
Mr. R. Howse, 16 St. Ann's Road, Bath.
Mr. S. B. Hanton, Boys' High School, Rondebosch, Cape Colony.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHORS.—Bevan's Genesis and Evolution of the Individual Soul Brown and Johnson's How People Live.
By E. ARNOLD.—Arnold's English Texts (Voyage to Lilliput, The Bible in Spain, and Natural History of Selborne); Byles' Rambles in Bookland; Chatwin's First Précis Book; Johnson's Dramatic Scenes from English Literature; Keen's De Beaumont's Contes de Fées.
By A. & C. BLACK.—Mackenzie's Selections from Barbour's The Bruce.
By BLACKIE & SON.—Defoe's Captain Singleton's Early Adventures; Evans' Geography of the World; Frew's Byron's Childe Harold's Pilgrimage, Canto IV.; Layng's Elementary Algebra; Rogers' Brief Survey of the World's History; Wright's Goethe's Lyrics and Ballads.
By MACMILLAN & CO.—Healey's First Book of Botany.
By METHUEN & CO.—Shipley's English Church History for Children, 1066–1500.
By J. MURRAY.—Fletcher's Introductory History of England. Vols. III. and IV.; Hardwick and Costley-White's Old Testament History, Vols. I. and II. Poole and Lassimonne's Textes et Questions.
By the OXFORD UNIVERSITY PRESS.—Sacret's Michelet's Jeanne d'Arc; Unstead's Practical Geography, Part II.; Wheeler's Tennyson's Enid.
By ALSTON RIVERS.—Lester and Tordoff's Public School Chemistry for Beginners.
Calendar of University College of Wales, Aberystwyth.
Calendar of University of Manitoba.
N.U.T. Report, 1909.

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CURRENT EVENTS.

Fixtures.

THE Half-Yearly General Meeting of the Members of the College of Preceptors will take place on Saturday, July 17.

* * *

PROF. RIPPMANN proposes to deliver (1) five lectures on Phonetics (English, French, German sounds), October 2, 16, 30, November 13, 27; and (2) five lectures on Methods of Modern Language Teaching, on the same days, at Queen's College, Harley Street. Apply to Prof. Rippmann, 45 Ladbroke Grove, W.

* * *

A NATURE Study Course for Women will be held at the Horticultural College, Swanley, Kent, July 31 to August 14. Entrance forms and particulars from the Principal.

* * *

THE Edinburgh Vacation Courses in French and English will be held, July 28 to August 28, within the University buildings. Particulars from Prof. Kirkpatrick.

Honours.

THE University of Oxford has conferred the following honorary degrees:—

D.C.L.: Mr. C. B. Heberden, M.A., Principal of Brasenose College (on occasion of the quatercentenary of the College); Lord Grey, Governor-General of Canada; Hon. Oliver Wendell Holmes, LL.D., Associate Justice of the United States Supreme Court; the Very Rev. Hermann Adler, D.D., LL.D., &c., Chief Rabbi of the United Hebrew Congregations of the British Empire; and Thomas Brock, R.A.

D.Litt.: Mr. James Ford Rhodes, LL.D., American historian.

D.Sc.: George E. Hale, Sc.D., LL.D., Director of the Solar Observatory of the Carnegie Institution of Washington, Mount Wilson, California.

* * *

ON the occasion of the Darwin celebrations, the University of Cambridge conferred the honorary degree of D.Sc. upon Prince Roland Bonaparte, Dr. Francis Darwin, Dr. Edmond Perrier (Paris), Mr. Secretary Walcott (Washington), Profs von Beneden (Liège), Bütschli (Heidelberg), Goebel (Munich), Graff (Graz), Hertwiz (Munich), Höffding (Copenhagen), Loeb (California), Schwalbe (Strassburg), Solms Laubach (Strassburg), Timiriazeff (Moscow), Vejdovsky (Prag), Verworn (Göttingen), Vries (Amsterdam), and Zeiller (Paris).

* * *

THE University of Manchester has conferred the following honorary degrees:—

LL.D.: Mr. Whitelaw Reid, the American Ambassador, and Sir Robert Stout, Chancellor of the University of New Zealand.

D.Sc.: Prof. Theodore William Richards, Professor of Chemistry at Harvard; Dr. Otto Wallach, Professor of Organic Chemistry in the University of Göttingen; and Prof. Henry Edward Armstrong, Professor of Chemistry in the City and Guilds of London Technical Institute.

Litt.D.: Sir Alfred Lyall and Mrs. Sidney Webb.

* * *

THE University of Glasgow has conferred the honorary degree of LL.D. upon six of the Colonial editors now visiting this country.

* * *

MR. ARTHUR J. EVANS, M.A., D.Litt., Extraordinary Pro-

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fessor of Prehistoric Archæology, has been elected to an Additional Fellowship at Brasenose College, Oxford.

* * *

THE ARCHBISHOP OF YORK (Dr. Lang) and Mr. Justice (Sir J. A.) Hamilton, formerly Fellows, have been elected honorary Fellows, of Magdalen College, Oxford.

* * *

MR. J. RENDEL HARRIS, M.A., Litt.D. Dubl., formerly Fellow of Clare College, Cambridge, and Mr. Owen Seaman, M.A., Litt.D. Dunelm., formerly Scholar and Porson Prizeman (now Editor of *Punch*), have been elected honorary Fellows of the College.

* * *

MR. H. S. THEOBALD, K.C., formerly Fellow of Wadham College, Oxford, has been elected an honorary Fellow of the College.

* * *

MR. JUSTICE (LORD) COLERIDGE, M.A., of Trinity College, Oxford, has been elected an honorary Fellow of the College.

* * *

A TABLET commemorating the late Mr. John Richard Green, the historian, has been placed in the inner quadrangle of Jesus College, Oxford.

* * *

A PORTRAIT of Archbishop Maclagan, painted by the Hon. John Collier, has been presented to his old College, Peterhouse, Cambridge.

* * *

AT a reception at the Sorbonne, Mr. Carnegie was presented with a medal commemorating his generosity to the University of Paris, which enabled it to found a special laboratory for Mme. Curie's radium researches.

Endowments and Benefactions.

THE late Mrs. Annie Fulton, always a generous supporter of Cardiff University College, has bequeathed to the College £4,000 as a specific legacy for general purposes, £3,327 for the establishment of a chair or chairs in connexion with the College, and £3,327 for the completion of the new buildings in Cathays Park.

Mr. Henry Webb, Llwynarthen, Castletown, has given £500.

Lord Tredegar has intimated his intention of making a further contribution of £5,000 to the fund for the new buildings—making his total contribution £12,500.

* * *

DR. CHARLES THEODORE WILLIAMS, Hon. Fellow of Pembroke College, Oxford, has given two sums of £2,500 each for scholarships in Physiology and Human Anatomy in Oxford University.

* * *

THE Clothworkers' Company have granted £50 for the present needs of the Pepysian Library at Magdalen College, Cambridge.

* * *

THE Drapers' Company have renewed their grant of £2,000 (£400 a year for five years) to the Department of Applied Mathematics under Prof. Karl Pearson, thereby enabling the research work in statistics and in the Biometric Laboratory to be continued and extended.—The Mercers' Company have made a grant of £500 to the Department of Physiology.

* * *

DR. JAMES DOUGLAS, of Quebec and New York, has founded a scholarship of £300 a year at Guy's Hospital Medical School for cancer research.

THE late Dr. Keeling has left £250 to the University of Sheffield.

* * *

MESSRS. JOHN SWIRE & SONS have promised a contribution of £30,000 towards the Hong Kong University Endowment Fund, the Taikoo Sugar Refining Company £5,000, and the Ocean Steamship Company £5,000, on condition that the whole amount required is subscribed.

Scholarships and Prizes.

A SUPPLEMENTARY examination for the election of one (Tenor) Choral Student will be held at St. John's College, Cambridge, on August 3. £40 for three years.

* * *

AN examination for Entrance Scholarships at Corpus Christi College, Cambridge, will be held on January 4–6.

Appointments and Vacancies.

DR. JAMES BELLAMY has resigned the Presidentship of St. John's College, Oxford. He recently celebrated his ninetieth birthday, and has been a member of St. John's for upwards of seventy years.

* * *

THE REV. ALEXANDER WHYTE, D.D., Minister of St. George's United Free Church, Edinburgh, has been appointed Principal and Professor of New Testament Literature in New College, Edinburgh.

* * *

PROF. JOHN CLELAND and Prof. William Jack have resigned their respective Chairs of Anatomy and of Mathematics in the University of Glasgow.

* * *

APPLICATIONS for the Chair of Constitutional Law and Constitutional History in the University of Edinburgh should be lodged with the Dean of the Faculty of Advocates, Advocates' Library, Edinburgh, by July 9.

* * *

MR. CHARLES RAYMOND BEAZLEY, M.A., D.Litt., Fellow and late Sub-Warden of Merton College, Oxford, has been appointed to the Chair of History in Birmingham University.

* * *

PROF. L. E. KASTNER, M.A. Cantab., Professor of French and of Romance Philology in the University College of Wales, has been appointed Professor of French in the University of Manchester, in succession to his father, Prof. Victor Kastner, B. ès L., M.A.

* * *

THE Professorships of Classics and of Geography in Queen's College, London, will fall vacant at the end of the current term.

* * *

THE REV. D. MIALL EDWARDS, M.A., Brecon, has been appointed Professor of Theology and Philosophy at the Congregational Memorial College, Brecon.

* * *

MR. A. R. BROWN, M.A., Fellow of Trinity College, Cambridge, has been appointed Martin White Lecturer in Ethnology in the University of London (for session 1909–10).

* * *

THE Council of College Hall (Hall of Residence for Women) have appointed Miss Alice Elizabeth Lindsell, M.A. Dublin, and formerly of Newnham College, Cambridge, to be Principal of the Hall in succession to Mrs. Viriamu Jones. She has been Acting Principal of College Hall during Mrs. Viriamu Jones's absence.

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Miss Frances H. Melville, M.A. Edin., Lady Warden of University Hall, St. Andrews, has been appointed to Queen Margaret College, Glasgow.

* * *

Mr. E. S. Foster, M.A., has been appointed Lecturer in Greek, and Miss E. C. Eaves, B.Sc. Lond., Demonstrator in Physiology, in Sheffield University. The Council have decided to appoint also an additional Lecturer in Education.

* * *

Mr. Arthur Lapworth, D.Sc. Lond., head of the Chemical Department of the Goldsmiths' Institute, New Cross, has been appointed a Senior Lecturer in Chemistry and Assistant Director of the Inorganic Laboratories, Manchester University.

* * *

Dr. Griffith Thomas, Principal of Wycliffe Hall, Oxford, has been nominated for the Archbishopric of Sydney.

* * *

Applications for a Junior Lectureship in French and a Junior Lectureship in German in Edinburgh University should be lodged with the Secretary of the University Court by July 12. £200 a year each.

* * *

A Lecturer in French and English is required for Homerton Training College, Cambridge. Apply early to the Principal. At least £100 resident.

* * *

Mr. Oscar Browning has resigned the Principalship of the Cambridge University Day Training College.

* * *

Mr. G. Fenton, B.A. Aberdeen, has been elected President of the Educational Institute of Scotland.

* * *

Applications for the Principalship of the Technical School, Dudley, should be lodged with the Director of Education, Dudley, by July 12. £200 to £250.

* * *

Mr. Nowell Charles Smith, M.A. Oxon., assistant master, Winchester College, has been appointed Head Master of Sherborne School.

* * *

Mr. H. C. Norman, B.A. Oxon, assistant master (French), Liverpool Institute, has been appointed Head Master of the Secondary School, Ramsgate.

* * *

The Rev. T. S. Bateman, B.A. Lond., assistant master, Watford Grammar School, has been appointed Head Master of the Grammar School, Coleshill.

* * *

A Head Master is required for the County Grammar School of King Edward VII., Coalville (£350); also a Science Master and Principal, and an Art Master, for Loughborough Technical Institute (£225 and £220). Apply to the Director of Education, Leicestershire C.C. (33 Bowling Green Street, Leicester) by July 14.

* * *

The Rev. W. Lloyd, M.A., Head Master of Ashby Grammar School, has been presented to the living of Tickenhall, Derbyshire.

* * *

Mr. F. Shirley Goodwin, M.A., Second Classical Master, Perse Grammar School, Cambridge, has been appointed Rector of the High School, Glasgow.

Mr. W. J. Watson, M.A., Rector of Inverness Royal Academy, has been appointed Rector of the Royal High School, Edinburgh.

* * *

Applications for the Head Mastership of the School of Art, Halifax, should be lodged with the Secretary (22 Union Street) by July 7. £250.

* * *

An Under Librarian is required at Cambridge University Library. Age 25 to 40. Apply to the Librarian by September 30.

* * *

A Librarian is required by University College, Dundee. Apply to the Secretary of the College by July 6. £120 to £150.

* * *

A Non-resident Mistress (for Mathematics and Class Singing principally) is required at Winchester County School. Degree and Teaching Diploma essential. Forms from the Director of Education for the County of Southampton, The Castle, Winchester, up to July 12. £100.

Literary Items.

Messrs. George Bell & Sons announce a new edition of Webster's "International Dictionary." Very few books have received such authoritative and general testimony in favour of their utility. The "Twentieth Century" edition will contain 2,348 pages and 5,000 illustrations. The work has been revised throughout, and will have a new supplement of 25,000 additional words, phrases, and definitions, prepared under the direct supervision of Mr. W. T. Harris, Ph.D., LL.D.

* * *

Messrs. J. M. Dent & Co. will shortly publish "Animals and their Ways," by Ernest Evans, a companion volume to the author's "Plants and their Ways"—written for students of Nature Study, and suitable as a first book of Zoology. Also the Intermediate Section of the "Ruskin Nature Reader," designed on the same plan as the Senior Section published last autumn.

* * *

Messrs. Heffer hope to publish in the early autumn an edition of the "Symposium" of Plato, by Mr. R. G. Bury—the first annotated edition of the dialogue produced in England. It will contain a revised text, and a literary and philosophical commentary.

* * *

Mr. Hammond Hall, late Editor of the *Daily Graphic*, has accepted the editorship of "Hazell's Annual," in succession to Mr. Wm. Palmer, who has resigned after seventeen years' service.

General.

Sir Robert Stout, Chief Justice of New Zealand, who is at present on a visit to London, spoke as follows concerning University education:—"We have double the number relatively getting a University education that you have. We hope the time will soon come when the Universities will be as free as State schools. Until that time comes I feel we shall not be doing our duty. A University career ought not to be a question of a man's means, but of his capacity."

* * *

The Educational Exhibit in the Department of Africa and the East at the Agricultural Hall shows extremely interesting work from all grades of colleges and schools. The work of the Japanese schools attracts special attention.

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ASSISTANT MASTERS IN SECONDARY SCHOOLS.

CONFERENCE AT CAMBRIDGE.

THE Incorporated Association of Assistant Masters in Secondary Schools met at the Leys School, Cambridge, on May 29. The morning was occupied by the deliberations of the Council on the Teachers' Register, the Pension Fund, and a Sickness and Accident Insurance scheme; and a resolution was unanimously passed instructing the Executive Committee to consider the advisability of establishing such a scheme and to report thereon to the Council in January next. In the afternoon the proceedings were opened with the address of the Chairman (Mr. W. A. Newsome, Stationers' School) to the General Meeting of the members of the Association.

THE CHAIRMAN'S ADDRESS.

The Chairman dealt first with the question of the Teachers' Register. The Permissive Clauses in the Act of 1906 (he said) provide for (1) the formation of a Registration Council representative of the teaching profession; (2) a Register to contain the names of all teachers in one column. "There are thus obviously two ways of dealing with the problem: settle the composition of the Council, and leave the Register to its care; or, come to some agreement first as to the form of the Register, and then constitute the Council. Now we may as well state here, clearly and openly, that the profession, as such, has no use for a one-column Register. This huge work, containing some hundreds of thousands of names, would be useless for reference; the general public could not use it, and would not if it could. The old two-column Register had failed mainly because of its form; it had accentuated class prejudices, and had undoubtedly caused bitterness, perhaps as justifiable as it was considerable. It was evident, therefore, that the real crux of the situation was the determination of the form of the Register, the principles of registration, or the "plan of registration," as Mr. Madeley called it at the Head Masters' January meeting. Thus it was that the obvious method of approaching the problem was along what seemed to be the line of least resistance, by way of a representative Registration Council. It was for this reason that the Federal Council—the oft-maligned Federal Council of Secondary Schools Associations—invited Dr. Gow to undertake the conduct of negotiations which, it was hoped, would result in the election of a representative body, acceptable to the Board of Education and to all branches of the teaching profession. Dr. Gow assembled a Committee which contained representatives of primary, secondary, and technical education; and a working agreement was ultimately arrived at. We are all familiar with the course of events which culminated in the deadlock of last November, and, while we deplore the result, it is evident that the rebuff was inevitable. And here I should like to take the opportunity of publicly acknowledging the debt that all teachers owe Dr. Gow for his self-sacrifice, his immense expenditure of time and energy on a task the accomplishment of which has proved hopeless—a task which, if successful, would only have postponed the conflict of interests, and might have prevented the great body of teachers from expressing their wishes on what is, after all, the point of vital importance to us, the form of the Register. Thus it is that, having failed to get the Council, we are compelled to grapple with the real difficulty. The old Register failed mainly because it shut up teachers in cast-iron compartments. The plan we advocate for the new Register should remove this objection once and for all. By Clause 16 of the Act, there must be one Register for all teachers. We suggest that to this there be appended sub-registers for special qualifications: (1) for primary teachers, (2) for secondary teachers, (3) for technical teachers and teachers of special subjects. At first sight this looks perilously like the old Register; but, under the proposed scheme, it will be possible for a man's name to appear on each of the sub-registers; the primary teacher's main objection to the old Register will be removed; and we believe that by the mere proposal of such a plan a great step will be taken towards the attainment of professional unity, whether the Register ever becomes an accomplished fact or not."

Mr. Newsome next reviewed the recent action of the Leeds Education Committee and "the corresponding attempts" elsewhere in regard to teachers' salaries. He then drew attention to the work of a Sub-Committee of the Association which had been appointed to investigate the conditions of service of teachers in other European countries, whether as Civil servants or otherwise, and expressed the hope that the report of this Committee, though it might provoke some divergence of opinion, would have great influence on the future policy of the Association, and quoted Dr. Upcott's dictum that what English education most wanted was unity, but unity without uniformity.

TEACHERS AND LOCAL AUTHORITIES.

A resolution that "This Association strongly protests against the unjust and unwise action of certain Local Authorities in repudiating their contractual obligations to teachers in schools under their control, and regards all attempts to suspend increases of salary or to lower salary scales as derogatory to the best interests of secondary education," was next moved from the chair, and, after some vigorous expression of opinion, was carried unanimously.

THE TEACHERS' REGISTER.

Mr. C. H. Greene (Berkhamsted School) introduced the subject of the Teachers' Register, and moved *en bloc* the following series of resolutions which had been adopted unanimously at the Council meeting in the morning:—

1. That a comprehensive Register of Teachers should be started in accordance with the Education (Admistrative Provisions) Act, 1906.
2. That the Register should contain opposite the name of each teacher reference numbers indicating the Sub-Registers and Schedules in which further details of each teacher's qualifications may be found.
3. That each Sub-Register should contain the names of teachers qualified to teach in one type of school (*e.g.*, primary, secondary, and technical); and should provide, by reference to Schedules, for the proper differentiation of teachers in respect of attainments, training, and experience.
4. That teachers should be admissible to as many Sub-Registers and Schedules as their qualifications warrant.
5. That a uniform fee of not less than one guinea should be paid by or on behalf of each teacher registered.
6. That for the purposes of registration the term *teacher* should be provisionally defined by Order in Council.
7. That the Order in Council should provide for the transference to the new Register of all teachers on the old Register, and for their names to be placed in the appropriate Sub-Registers.
8. That the total amount of fees already paid for the registration of teachers (about £12,000) should be transferred to the new Registration Council.
9. That the Order in Council should provide for the formation of a Registration Council. to consist, in addition to a small number of nominated or co-opted members, of representatives of each Sub-Register; such representatives to be elected to serve for a definite period in equal numbers by the teachers on each Sub-Register; and in such a manner as to secure that the whole Council should not retire at one time.
10. That, as a temporary measure, the Order in Council should provide that in the first instance the Registration Council be formed in the proportions above indicated, but on nomination by certain Associations or Bodies to be specified in the Order.

These resolutions were submitted to enable and empower the Executive Committee to answer questions that have been proposed to them, and to assist in future discussion, and they are not to be taken as a final expression of opinion on the part of the Association. They were carried unanimously.

SPECIALIST AND FORM SYSTEMS.

Mr. G. Warre Cornish (University College School) then read a stimulating and suggestive paper on "The Specialist and Form Systems in Secondary Schools Compared," in which he pleaded that one man should teach one subject and one subject only. In support of his contention he dealt exhaustively with Latin, in terms which should be of special interest to the advocates of the new method of teaching this language:—"Latin," he said, "is a subject which particularly requires special teaching, and specialist knowledge and methods. Its condition at present is highly unsatisfactory. Mistakes are made which would be an impossibility to boys in a subject of which they had a living understanding, whilst the simplest passage direct from an ancient author is apt to floor the great majority. The reason is that teachers take a narrow view of the subject. Latin is an easy subject to teach mechanically and superficially. The majority of teachers think that a very modest amount of scholarship is sufficient to instruct any but the highest forms. Consequently the knowledge of the language bears small reference to the language as a language, or to the ancient world as a field of study. It is a merely pedagogic subject, taught not for its own sake, but rather as a form of mental gymnastic. But Latin is capable, if specially treated, and if the proper scope of the subject is allowed, of being far more than this. I am not speaking now of the few who arrive at real scholarship and real appreciation of ancient authors, but of Latin as a compulsory subject in lower forms. The great

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possibilities of the subject are not done justice to. A teacher should know the language as a language, be not afraid to write it, and handle it as freely as possible, even though his results may not be the equal of Cicero and Tacitus. If he is afraid of the language, dare not trust himself in it, and still trembles at the thought of lurking mistakes and un-Latin forms of speech, what degree of familiarity or ease can his pupils be expected to attain? Only one man in a thousand can learn to write good Latin, but any teacher can with practice learn to use Latin as a language." Several speakers followed, and it was pointed out that a prolonged course of teaching one subject might lead to staleness, was unlikely to promote due co-ordination in the school time-table, and could not be introduced into the smaller schools on the ground of expense.

CONFÉRENCES FRANÇAISES.

SOCIÉTÉ NATIONALE DES PROFESSEURS DE FRANÇAIS.

MADAME TALLIEN.

Par M. A. CANIVET.

LE 29 mai, à la belle salle du College of Preceptors, M. A. Canivet traitait, devant une nombreuse et sympathique assistance, l'intéressant sujet de "Madame Tallien." M. le professeur Couillault était au fauteuil présidentiel.

Le conférencier, après avoir rapidement critiqué les quelques ouvrages qui ont été écrits sur cette femme célèbre de l'époque révolutionnaire—lesquels, déclare-t-il, sont partiaux et ne projettent aucune lumière définitive sur Mme Tallien—entre au cœur même de son sujet.

Née en Espagne en 1773, d'un père d'origine française occupant une haute situation à la cour de Madrid, la future Mme Tallien, qui n'est encore que Mlle Thérézia Cabarrus, vient à Paris, en 1785, pour parfaire (ou plutôt refaire) son éducation qui a été jusqu'alors assez décousue. Elle épouse le marquis de Fontenay en 1788, n'étant encore âgée que de quinze ans et demi. Elle est déjà célèbre dans le monde par sa superbe chevelure de jais et son extraordinaire beauté qui fera tourner tant de têtes.

Fuyant la Terreur, le marquis et la marquise, qui sont en instance de divorce mais que le danger commun rapproche, arrivent à Bordeaux en 1793, au moment où les républicains bordelais, indignés de la mise à mort des Girondins, menacent de créer une insurrection dans le Midi de la France, mouvement que la Convention prévient en envoyant à Bordeaux l'un de ses membres les plus farouches, le jeune, beau et peu scrupuleux Tallien. Celui-ci établit le régime de la Terreur par tout le Midi. La belle marquise de Fontenay, qui a repris son nom de Thérézia Cabarrus, se trouve un jour comprise dans l'une des terribles "fournées" bordelaises.

Tallien, qui semble l'avoir aimée en secret quelques années auparavant, lui sauve la vie et fait d'elle une déesse révolutionnaire. En amazone, coiffée du bonnet rouge, on la voit plus d'une fois passer à cheval dans les rues de Bordeaux, ou, en robes de mousseline, trôner sur les coussins d'une voiture de gala, aux côtés du proconsul tout d'abord implacable et qui, par amour d'elle, s'adoucit et épargne les suspects. Des espions de Robespierre dénoncent au Comité de Salut public le trop faible constitutionnel endormi aux genoux d'une aristocrate pendant que toutes sortes d'ennemis conspirent contre la République.

Tallien est venu se justifier à Paris; l'ex-marquise l'y rejoint peu après. Robespierre s'est déjà résolu à les envoyer tous deux à la guillotine. Mais Tallien a sur la Convention une influence considérable: "le tyran" n'ose le frapper de face; du moins, se venge-t-il en faisant jeter son amie en prison. Pour sauver cette dernière, que la guillotine menace, Tallien fait tomber Robespierre (9 thermidor, an II.; 27 juillet 1794).

C'est la fin de la Terreur; ce sont les portes des prisons qui s'ouvrent, ce sont des milliers de suspects arrachés à une mort certaine: Thérézia Cabarrus devient la patronne des naufragés de l'ancien régime; on la bénit sous le nom de Notre-Dame-de-Thermidor. De juillet 1794 à octobre 1795, elle et Tallien sont les idoles de Paris; dans sa reconnaissance envers son sauveur et son enthousiasme pour le héros de Thermidor, elle a voulu définitivement lier son sort au sien; ils se sont mariés et l'avenir semble leur promettre toutes les joies et tous les bonheurs.

La place nous manque pour suivre le conférencier dans l'exposition de la seconde partie de l'odyssée de Mme Tallien. C'est pourtant la période la plus intéressante de la vie de cette femme extraordinaire. C'en est aussi la moins connue. Qu'il nous suffise de dire que l'exposé de M. A. Canivet, forcément sobre et circonspect, a laissé entrevoir de fort curieux dessous de l'histoire de l'époque dorée du Directoire. La peinture saisissante qu'il a faite du déclin de Tallien, de l'ambition effrénée de l'ex-marquise, de sa soif d'adulation et de plaisirs, de sa trahison de l'homme qui lui avait tout sacrifié et sauvé deux fois la vie; puis de la misère, de l'oubli où mourut l'ancien terroriste pendant que la belle Thérézia continuait sa course ascendante dans le ciel de la célébrité et de la fortune mondaine, finissant princesse de Chimay, mère de famille respectée et entourée d'enfants — cette peinture ne peut que donner aux curieux d'histoire le désir de se documenter davantage sur cette femme et sur cette période particulièrement captivante.

REVIEWS.

A CENTURY OF GERMAN HISTORY.

A History of Germany, 1715–1815. By C. T. Atkinson, Fellow and Modern History Lecturer of Exeter College, Oxford, formerly Demy of Magdalen College, Oxford. (12s. 6d. net. Methuen.)

During the hundred years covered by Mr. Atkinson's volume, Germany "was not a nation with a well-defined national life and history, but was merely a chaotic collection of states with conflicting aims and ideals, constantly engaged in struggles with one another." At the beginning of the period Mr. Atkinson counts three hundred and sixty-five states as making up the German Kingdom—one for every day in the year; and "particularism and localism were infinitely stronger than any unifying or centralizing tendencies." Moreover, the struggles of the principal states "are so completely merged in the international history of Europe as a whole that the affairs of Germany only become intelligible, if at all, when narrated as part of the history of all Europe." In such straits and complications, then, the historian with limited space must exercise a decisive power of selection. Mr. Atkinson chooses to lay most emphasis upon the military aspect of affairs, remarking but casually upon the social conditions and the intellectual and literary life of the period. It matters little to inquire whether the military movements, and especially the details of some at least of the battles, might not have been treated so as to relieve space for a more complete presentation of the various elements of the life of the time. Mr. Atkinson has deliberately decided to do what he conceives he can do best, and the scope of his subject is quite important enough for independent handling.

Wherever the historian makes a start, he is liable to be chided for not starting somewhere else. Big as a break may look, there is always an underlying continuity to reckon with. The Peace of Westphalia in 1648 may seem a more decisive opening, but the essential failure of the Hapsburgs (it should require but little courage to write the correct form, "Habsburgs") "to make real their position as titular heads of Germany came with the premature death of Joseph I." in 1711; and "the condition in which the year 1715 found Germany differed in degree rather than in kind from that in which the Thirty Years' War had left her in 1648." Mr. Armstrong opens his work with a succinct and lucid sketch of the Empire and its institutions, and of the states composing the German Kingdom in 1715. After bringing into line various preliminary and collateral movements, he puts his strength into an ample narrative of the War of the Austrian Succession and of the Seven Years' War, interposing an instructive account of Maria Theresa's reforms and of the Diplomatic Revolution. The military operations are described with great spirit, and on an ample scale. The Partition of Poland, Mr. Armstrong says, "is an action which it is much easier to condemn in the strongest terms than to extenuate in the least." But "it was only with real and sincere reluctance that Maria Theresa at last listened to the urgent advocacy of it by Kaunitz and Joseph," her ambitious and energetic son, who was now gaining the upper hand in the Austrian counsels. Mr. Armstrong's estimate of Maria Theresa is worth quoting:—

What she did for Austria it is hard to over-estimate. Her indomitable courage and perseverance carried her dominions through an almost unexampled danger and made the surmounting of that very danger a

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source of union and strength. She did much to reconcile Hungary to the Hapsburg dynasty, to reform the administration and the social, financial, and political conditions of the countries over which she ruled. A woman of the highest character, a true mother of her people, a "benevolent despot" in the very best sense of the words, she had the tact and sympathy to see what was possible and suitable, and to avoid the errors into which her more impetuous, more theoretical, and more self-centred son fell. In all the annals of the House of Hapsburg, there is hardly any name which can be put on the same level as that of Maria Theresa.

The Silesian Wars had immensely enhanced the prestige and the whole position of Prussia in Europe as well as in Germany, and rendered it hopeless to look for the reunion of Germany by the House of Hapsburg. "The only real effect of the war on Germany was to complete the utter disintegration of the German kingdom, which had suffered so much through its association with the Holy Roman Empire." Germany thus lay open to the assault of France. Until the year 1791, however, the French Revolution "was regarded as a purely French concern, important to the rest of Europe only because it prevented France from taking her usual part in international politics." In 1792 the armies were in the field, from the intervention of Austria and Prussia in the internal affairs of France. The story of the conflict down to the liberation of Germany from the yoke of Napoleon occupies the remainder of the volume—a series of spirited descriptions of strategic movements and military operations. There are thirty-five maps and plans, and a full index. The work is comprehensive and scholarly, and presents in a reasonable compass a very clear account of a very important period in the development of modern central Europe.

CONICS.

(1) *Cartesian Plane Geometry.* Part I., *Analytical Conics.* By C. A. Scott, D.Sc. (5s.) (2) *Geometry of the Conic.* By G. H. Bryan, M.A., F.R.S., and R. H. Pinkerton, M.A. (3s. 6d. Dent.)

Both these volumes belong to a series of school text-books—mathematical and scientific—published by Messrs. Dent & Co., under the able editorship of Mr. W. J. Greenstreet, M.A., F.R.A.S. Each affords a valuable course in the geometry of the plane sections of the cone, the former dealing with the subject from the standpoint of analysis, the latter proving the elementary properties of these and certain other well known curves by the methods of geometry unaided by algebra. Each work has certain characteristics which give it an individuality amongst treatises on this branch of mathematics. To Dr. Charlotte Scott's volume, in addition to its own intrinsic worth, which must claim for it a leading place in the ranks of standard text-books, there attaches a melancholy interest by reason of the circumstances under which its production was undertaken. The task of contributing to the series a volume on the subject was left unfinished owing to the untimely death of the appointed author, the late Mr. R. W. H. T. Hudson. His MS., we learn from Dr. Scott's preface, has left a distinct impress on the work as we have it; but, in the main, the actual writer has given to students her own view of a subject in which she is known to be an expert by those who have had an opportunity of seeing some of the results of her higher work. The present treatise may be widely differentiated from others of its class by the fact that the theory is studied throughout with the help of line as well as point co-ordinates. The combined use of the two systems is preferred as likely to ensure a clearer insight into fundamental truths than the exclusive employment of either, and the whole treatment testifies to the author's skill. The writer, however, allows the traditional point system to occupy the more prominent place of the two. The entire course is most instructive, and calculated to give the student a grasp of the broad principles of the subject.

The special character of Messrs. Bryan and Pinkerton's text-book is to be looked for in the arrangement rather than in the actual contents of the text, and in the careful summary which precedes each chapter. The development of the theory of the three leading varieties of the conic proceeds *pari passu*, each curve throwing light on the others, by means of a discussion on the one hand of properties common to all and on the other of those peculiar to each. In some cases the diagrams are of exceptional excellence, but all are good. The book is designed to help the student who, without a knowledge of the geometry of the conic sections, is often placed at a serious disadvantage in his later work.

GENERAL NOTICES.

CLASSICS.

Atlas Antiquus. By Emil Reich, Doctor Juris. (10s. net. Macmillan.)

Dr. Reich follows in this volume the plan of his Atlas of English History. The chief purpose of the work is "to project historical events graphically upon the territory in which they happened and by the configuration of which they were largely influenced." There are forty-eight "original graphic maps, with elaborate text to each map." The maps are excellently produced. The drawing of the lines of the multifarious military movements of Greek and Roman history must have involved enormous labour. Apparently confusing as the lines often appear to be at the first glance, there needs but a little patience to follow them surely: and they will be very helpful to the student—though he ought really to draw his own lines. The text accompanying each map presents a concise historical outline of the movements illustrated; it is very much better done than was the text of the English History Atlas. There is a full index.

The Annals of Tacitus, Books XI.–XVI.: an English Translation. By George Gilbert Ramsay, M.A. Oxon., Litt.D. Dubl., LL.D. Edin., Aber., & Glas., late Professor of Humanity in the University of Glasgow. (15s. net. John Murray.)

Dr. Ramsay now completes his English version of the "Annals." As in the former volume, he has diligently thought out the meaning of the text and expressed it in plain narrative English. The form is, of course, not Taciteau: that would tax the powers of a Carlyle at his best, and probably enough would satisfy nobody. Nor is the English marked by such study of the niceties of expression as the translator has bestowed upon Latin prose. Still it is direct and vigorous English, and it reproduces with alert and patient fidelity the context of the original; and that suffices. The footnotes "are intended to put the English reader in possession of all the information needed for the understanding and appreciation of the history, and also to justify to the scholar, where necessary, the interpretation given, or the reading followed, in the translation." They are ample and welcome aids, and they bear the marks of the careful and discriminating scholarship that characterizes the translation. In a long discursive introduction, Dr. Ramsay reviews the history recorded in the Books translated, discusses the art of translation, and deals in considerable detail with outstanding characteristics of the language and style of Tacitus. Though (and to some extent because) occasionally discursive, the essay is of sustained interest; and it will be found very instructive and suggestive. There are two excellent maps—Roman Britain, and Armenia. The index is reasonably full. We heartily congratulate Dr. Ramsay on the accomplishment of a scholarly, sincere, and most laborious work.

A Grammar of the Old Testament in Greek according to the Septuagint. By Henry St. John Thackeray, M.A., sometime Scholar of King's College, Cambridge. Vol. I.: Introduction, Orthography, and Accidence. (8s. net. Cambridge University Press.)

This volume is yet another evidence of the increasing attention of scholars to Hellenistic Greek, and particularly to the Septuagint. The Attic purist may contemn a Greek that is far removed from the Attic standard; but "the Septuagint, in view both of the period which it covers and the variety of its styles, ranging from the non-literary vernacular to the artificial Atticistic, affords the most promising ground for the investigation of the peculiarities of the Hellenistic or 'common' language." Besides, it was the only form in which the Scriptures were known to many generations of Jews and Christians; it exercised a strong influence upon New Testament and Patristic writers; and "the fact that it is in the main a translation gives it a special character and raises the difficult question of the extent of Semitic influence upon the written and spoken Greek of a bilingual people." An elaborate introduction deals at considerable length with grammar and textual criticism, the grouping of the LXX Books, the κοινή (basis of LXX Greek), the Semitic element, the papyri and the uncial MSS. Then follows the detailed treatment of the orthography and phonetics, and of the Accidence. The volume has obviously cost immense labour, minute, exacting, and but faintly realisable by any one that has not gone through some similar process of investigation; and it must be regarded as a very valuable contribution to the elucidation of the later development of Greek, and to its application under the peculiar conditions of Semitic influence.

MATHEMATICS.

A First Course in the Differential and Integral Calculus. By William F. Osgood, Ph.D. (10s. 6d. Macmillan.)

A well written and very interesting treatise. The author—who holds the Professorship of Mathematics in Harvard University—gives to his readers a course in differential and integral calculus in which the subject is treated by methods analogous to those that he has used for years past in the classroom of the University. The scheme adopted is, moreover, in general agreement with the lines of argument followed by Prof. B. O. Peirce in this branch of mathematics. The work exemplifies a happy combination of theory with the practical applications to which it lends itself. We see one of the special features in the writer's mode of grouping the leading elementary principles of the calculus and in his discussion

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of a group first in its formal and theoretical aspect and immediately afterwards in its relation to practical problems, physical, geometrical, &c. Perhaps this may be considered before all others the ruling characteristic of the treatise. Another excellent quality, met with indeed in many others of the best manuals, is the absence of proofs that are rendered unnecessarily difficult either with regard to method or to language.

Correlated Arithmetic (Scheme II). By S. W. Trought, B.A. Book III. (Teacher's), 1s. 3d. net. Book IV. (Scholar's), 3½d. (Pitman.)

A continuation of the series, the earlier volumes of which attracted favourable notice in these columns some time since. The course of instruction is carried on by the writer on the same lines as in the former parts of the work. As the epithet "correlated" implies, a special feature of the scheme of study is the attempt to teach the subject not as an isolated one, but in its relation to other branches included in the school curriculum.

Elementary Mensuration. By W. M. Baker, M.A., and A. A. Bourne, M.A. (1s. 6d. George Bell.)

A handy little volume designed for the useful purpose of providing a course of elementary work in mensuration which will not be beyond the grasp of students whose mathematical knowledge is limited to that acquired through the study of arithmetic. Nevertheless, the contents of the manual may also be of much practical value to more advanced workers, since the matter discussed is fairly comprehensive in character. The text-book is fully illustrated and neatly brought out.

SCIENCE.

Dent's Scientific Primers (Edited by J. Reynolds Green, Sc.D., F.R.S.).—(1) *Chemistry*, by W. A. Tilden, D.Sc., F.R.S., Professor of Chemistry in the Imperial College of Science and Technology.—(2) *Biology*, by R. J. Harvey Gibson, M.A., Professor of Botany in the University of Liverpool.—(3) *Botany*, by J. Reynolds Green, Sc.D., F.R.S., Downing College, Cambridge. (1s. net each.)

Excellent as were the science primers of a generation ago, the time has certainly come for a restatement of the fundamental theories of the several sciences in simple language and in an introductory manner. Science has advanced immensely; "new facts have been discovered; older observations have been re-interpreted; new theories have been formulated, and old ones amended or discarded altogether": indeed, old boundary lines between the sciences have been obliterated or broken. For this new series Messrs. Dent have wisely appealed to foremost men in the several sciences. The first three volumes of the series are admirable examples of the union of scientific knowledge and popular exposition. The form is handy; the type and the get-up are excellent; and the illustrations are numerous and effective.

"Practical Elementary Science Series."—*Elementary Applied Mechanics (Statics), introducing the Unitary System.* By Alexander Norwell, B.Sc., C.E., Principal of Greenock Technical School and Watt Memorial Engineering and Navigation College, Greenock. (3s. Longmans.)

Mr. Norwell here gives the substance of his teaching of statics to young engineering students in evening class during the past eighteen years. He makes a distinctive feature of the unitary system in working out the examples, and no doubt the consistent employment of units secures marked advantages. Without attempting a complete exposition of graphical statics, he yet introduces efficiently graphical solutions and methods by way of complement to the arithmetical solutions. The trigonometry of the right-angled triangle is freely applied, often side by side with other methods; and this element of the treatment should receive serious attention. Numerous typical examples are worked out, and an abundant selection of examples for practice is provided under every section, with the answers appended. There are 218 figures. The volume has been thoroughly well thought out, and the exposition is lucid and pointed. An exceptionally capable and practical text-book.

A Public School Chemistry for Beginners. By E. C. Lester, B.Sc., Senior Science Master, Eastbourne College, and B. Tordorff, B.A., late Scholar of St. John's College, Oxford, Assistant Science Master, Eastbourne College. (3s. 6d. Alston Rivers.)

The authors make a valiant effort to place themselves in the position of young beginners in chemistry, and to realize what is really important at the moment and what may be advantageously postponed or specially arranged. They present in an interesting form such theoretical information as may be learnt outside the laboratory just as well as in it; and they satisfy the practical claims by describing the important experiments and furnishing at the end of each chapter a well-selected and considerable set of suggested experiments, as well as testing questions. The final chapter is devoted to the metals—somewhat of a novelty, perhaps, but still a procedure bearing very directly upon portions of a beginner's practical work. There are 26 figures. A very sensible and serviceable book.

Botany for Matriculation. By F. Cavers, D.Sc., F.L.S., Professor of Biology at Hartley University College, Southampton. (5s. 6d. Clive: University Tutorial Series).

Prof. Cavers furnishes a very full and lucid treatment of the higher plants—flowering or seed plants. He justifies the inclusion of a good deal of matter that is usually reserved for books on chemistry, physics, meteorology, and geology, by the opinion that ecology (the study of adaptation to environment) and physiology are the aspects of plant life that should be chiefly presented to beginners; and he gives a long chapter on air, water, and soil, because "it is impossible to get a clear picture of the adaptations of a plant without carefully studying its natural surroundings and also experimenting with it under controlled conditions." The principle is right, and it carries with it a distinct accession of interest. Prof. Cavers's name guarantees the quality of the technical exposition. A large number of experiments are proposed, and to each chapter is attached a considerable series of questions. There are 179 figures. An excellent introductory work.

MODERN LANGUAGES.

(1) *Polyglot Phrases.* Collected and Arranged by Lewis Nicholas Worthington, M.A. Yale, M.D., Officier d'Académie, &c. (5s. Bell.) (2) *French and English Parallels.* By F. R. M. Fursdon. (3s. 6d. net. Methuen.)

(1) Dr. Worthington presents a considerable volume of phrases, spaciously printed indeed, yet containing 2,641 sentences, each in four languages—French, English, Italian, and German. We fail to discover any principle of arrangement: there is no division of the text indicating a fresh aspect of the subject, and there is nothing, so far as we can see, in the proximity of particular phrases to suggest an underlying classification, nor is there an index, or a list of contents. You plunge in anywhere, and you are instructed as chance will have it. However, the collection is a very good one to dip into, and the comparison of the different modes of expression in the different languages is always interesting to linguistic students. (2) Mr. Fursdon endeavours to be systematic, as far as his materials will bend to system. He begins with definitions of terms: gallicism, locution, idiom, &c. He next divides his matter into three parts: idioms, metaphors, and maxims and proverbs; and he arranges the idioms and the metaphors in alphabetical order—necessarily somewhat uncertain, but still an order. Moreover, he appends both a French and an English index. The equivalents are idiomatically expressed, and the volume will form a most helpful companion to text and dictionary.

French Series for Rapid Reading. General Editors: Otto Siepmann and Eugène Pellissier. (6d. each volume. Macmillan.)

This series forms a welcome addition to the readings in good and easy French likely to interest beginners. The books ought to be read largely at home as well as in school. The story will be a sufficient attraction, which will not be lessened by being disengaged from the school routine; and the notes will explain all that needs explanation in the matter of the text, and the "Words and Phrases" will serve adequately for vocabulary. The type is excellent, and the get-up is agreeable. There are to be three sections—Elementary, Intermediate, and Advanced. All the examples as yet before us belong to the Elementary Section: (1) Les Aventures du dernier Abencerage (Chateaubriand); (2) Les Deux Frères (Dumas); (3) La Chasse au Lion (Gérard); (4) Le Chien Volant (Mme de Girardin); (5) Pif Paf, ou L'Art de gouverner les Hommes (Laboulaye); (6) Yvon et Finette (Laboulaye); (7) Les Prisonniers du Caucase (de Maistre); (8) Contes des Fées (Perrault); (9) Les Jeunes Parisiens (Pezet); (10) Pocahontas (Pichot); (11) David le Trappeur (Souvestre); (12) La Bibliothèque de mon Oncle (Töpffer); (13) Le Col d'Anterne (Töpffer). Of course, the works are nearly all "adapted" to the special purpose. An excellent series.

Messrs. Whittaker publish a *Teacher's Handbook to Mackay and Curtis's First and Second French Books*, consisting of "Notes to First French Book," by D. Mackay, M.A., Ayr Academy, and F. J. Curtis, Ph.D., B.A., Professor at the Akademie, Frankfurt am Main, formerly of Dollar Institution, and of "Notes to Second French Book," by D. Mackay, M.A. (1s. net). The original works are framed in accordance with the direct method, and the new explanations and directions drive home the main points. The aid of phonetics is freely invoked. A very thoughtful and practical book.

The Cambridge University Press issues a fourth edition of Dr. Karl Breul's papers on *The Teaching of Modern Foreign Languages and the Training of Teachers* (2s. 6d. net). The brochure is steadily developing into a book. It has been very carefully revised and not inconsiderably enlarged, so as to bring it up to date in every respect. We join cordially in the author's hope "that it may once more prove useful to many students and teachers, and in some parts also to educationists and members of Local Education Committees who have officially to deal with modern languages." And we have no doubt that it will.

A Pocket Glossary of English-Spanish and Spanish-English Technical Terms, suitable for the Engineering, Manufacturing, and Mining Industries, by R. D. Monteverde, B.A. Madrid, Examiner to the London County Council, Lecturer at the Birkbeck College, &c., cannot fail to be most useful in the large and increasing commercial intercourse of English- and Spanish-speaking countries (2s. 6d. net, Crosby, Lockwood, & Son). It is neatly and strongly got up, and can be conveniently lodged in the vest pocket.

Esperanto insistently claims attention. *Esperanto for the English*, by A. Franks (6d. net, Milner, 15A Paternoster Row), affords ample instruction in the language: grammar, exercises, correspondence, conversations, vocabulary. *The Student's Elementary Text-Book of Esperanto*,

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by Leslie P. Beresford, LL.D., M.A. (International Language Publishing Association) very efficiently sets out "first steps."

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MATHEMATICS.

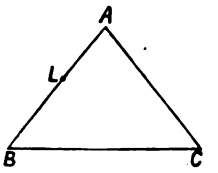
9442. (Artemas Martin, LL.D.)—A point is taken at random in the surface of a given triangle. Find the average area of the triangle cut off by a line passing through the random point.

Solution by W. Rigby, B.A.

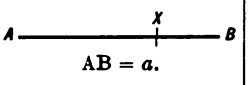
Let the line drawn at random cut one of the sides in L. Joining L to points in BC gives a series of triangles whose average area $= \frac{1}{2}\triangle BLC$, for the average position of the point in BC is the mid-point of BC.*

The average position of the point L is the mid-point of AB. Therefore average area of $\triangle LBC = \frac{1}{2}\triangle ABC$.

Therefore average area of triangle cut off by a random line $= \frac{1}{4}\triangle ABC$.



* X is a point taken at random in line AB. The average length of AX is given by



$$\int_0^a x\,dx \Big/ \int_0^a dx = \tfrac{1}{2}a^2/a = \tfrac{1}{2}a.$$

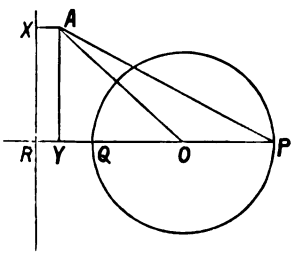
Therefore average position of X is midway between A and B.

16598. (M. T. Naraniengar, M.A.)—A is a fixed point. P is any point on a fixed circle. Show that the inverse of the fixed circle with respect to a circle of radius PA and centre P has for its envelope another fixed circle.

Solution by S. Narayanan, B.A., L.T.

If $PQ.PR = PA^2$, XR is the inverse of the circle with respect to P and radius PA.

Let O be the centre of the fixed circle, r the radius, and d the distance AO.



Now $PQ.PR = PA^2$;

therefore $2r(r + OY + YR) = AO^2 + OP^2 + 2OP.OY$,

i.e.,

$2r(r + OY + AX) = d^2 + r^2 + 2r.OY$;

therefore $2r(r + AX) = d^2 + r^2$;

therefore $AX = (d^2 - r^2)/2r = \text{constant}$.

Hence the envelope of XR is a circle with A as centre and radius $= (d^2 - r^2)/2r$.

16023. (*Communicated by* "Inquirer.")—A. starts from a point on a straight endless canal and walks 20 miles in a straight line in a random direction, and then camps for the night. Next morning he starts off in a random direction, and keeps walking in a straight line. What is the chance of his meeting the canal again before he has walked more than 20 miles?

Solution (?) *by* C. E. Youngman, M.A.

From the starting point O draw $2n$ lines, dividing the 180° at O into $2n+1$ equal parts, each of the value of θ, and suppose that A. on his outward walk has to take one of these lines. Then, if he takes the first line or the last, his chance of meeting the canal the next day is $(\pi - 2\theta)/2\pi$, that is, $(2n-1)/(4n+2)$. If he takes the second or the last but one, the chance is $(2n-3)/(4n+2)$; ...; if the n-th or the $(n+1)$-th, it is $1/(4n+2)$. These chances, all equally probable, form two arithmetical progressions, and their average is $n/(4n+2)$, which, when n grows infinite, gives the required probability $\frac{1}{4}$.

Over the breakfast table the argument might run: Suppose the canal goes east and west, and that the man, a *perfectly* average person, is on the north bank. Then on the first day he will, by the necessity of his nature, go either N.E. or N.W. North? No; north is an extreme, not an average. For the possible directions arrange themselves in pairs of equal effect, and the first pair is E. and W., the last N. Well, then, on the second day any direction from S.E. to S.W.—a quarter of the compass—will bring him back to the canal, but any direction in the other three-quarters will not; and the odds are 3 to 1 on failure.

It is not convincing. Is it sound?

16534. (James Blaikie, M.A.)—A rectangular parallelopiped has its length and breadth each equal to twice its height. Show that it can be cut into five parts which can be arranged so as to form a polyhedron bounded by six square and eight hexagonal faces. Also show that such polyhedra can be placed together so as to fill space.

Solution by B. C. Wallis, B.Sc. (Econ.), F.C.P.

Figs. 3 and 4 are drawn to twice the scale of Figs. 1, 2, 5, 6, 7.

Figs. 1 and 2 represent the polyhedron, edge $\frac{1}{2}$ inch, so as to show the octahedron from which it is developed by removing a square pyramid from each corner. A, B, E, F are hexagonal faces. C, D are square faces. *ab*, *cd*, *ef*, *gh* are diagonals of square faces.

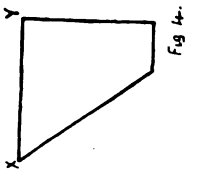


Fig 4.

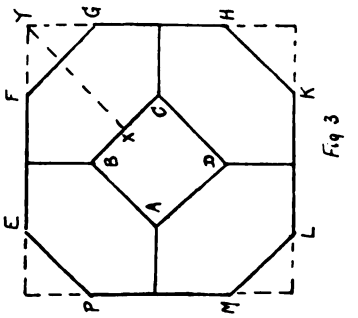


Fig 3

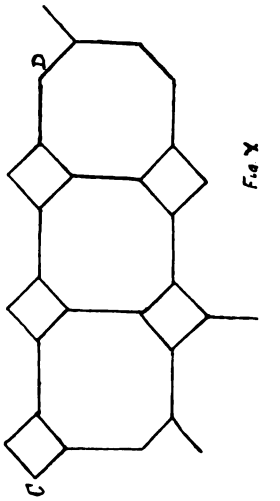


Fig 7

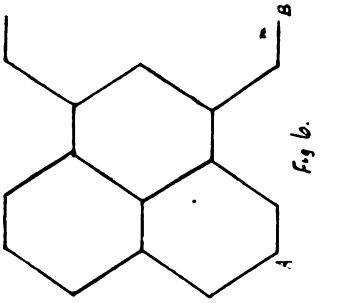


Fig 6.

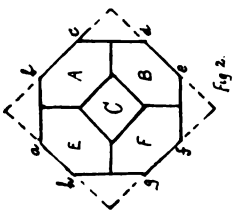


Fig 2.

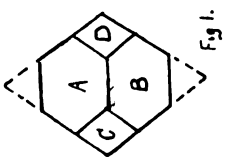


Fig 1.

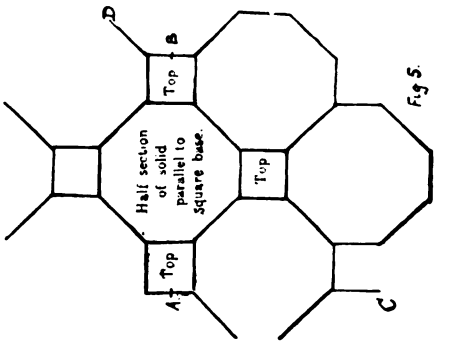


Fig 5

Fig. 3 represents the parallelopiped, height half the height of the polyhedron. Mark a square ABCD on the top square face, and the octagon EFG...MP on the bottom square face. Cut along the hexagonal faces, *i.e.*, in the planes of (i.) AB and PE, (ii.) BC and FG, (iii.) CD and HK, (iv.) DA and LM. This leaves half the polyhedron and four pieces, of which a section along XY is shown in Fig. 4. These four pieces have each a hexagonal face, and on these being arranged outwards the four pieces build up into half the polyhedron.

If a series of such polyhedra be placed on square faces, a second similar series will fit into the spaces left, and Fig. 5 shows a section across the tops of the first series.

Fig. 6 is a section along AB.

Fig. 7 is a section along CD.

These figures prove that such polyhedra could fill space.

The following Solution is due to the Proposer:—

Let ABCDEFGH be the parallelopiped. Let I, J, K, L be the mid-points of AB, BC, CD, DA; O the centroid of ABCD; P, Q, R, S the mid-points of OI, OJ, OK, OL. Let M, N be the mid-points of EF, FG; U, V the mid-points of FM, FN; T, W the mid-points of LM,

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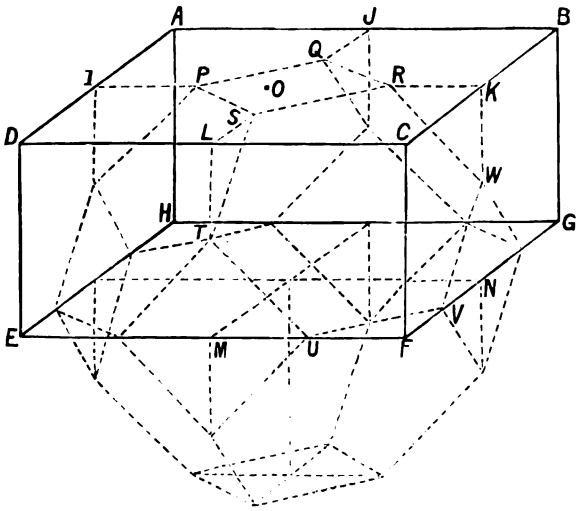
KN. Then it is easily seen that RSTUVW is a plane hexagon passing through the centroid of the cube OLCKNFM, and dividing it into two

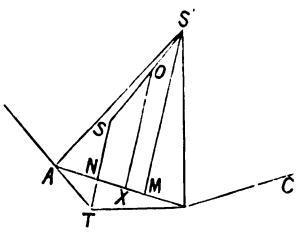


congruent polyhedra. If the half-cube CKRSLTUFVW be removed, and if equal and similar half-cubes be cut from the other three cubes which form the parallelopiped, these four parts can clearly be placed below the plane EFGH so as to form along with the unremoved part of the parallelopiped a tetrakaidecagon or 14-faced solid as shown in the diagram.

It is clear that such polyhedra fill space, as space can be filled with solids congruent to ABCDEFGH; and, if we consider two consecutive layers of such solids similarly cut to the one in the diagram, we see that A, B, C, D are each the centroid of a similar polyhedron touching one of the upper hexagons of the polyhedra in the diagram, and filling up space along with it and a similar figure standing above the square PQRS.

11298. (Professor NILKANTHA SARKAR.)—A number of light rigid rods are loosely jointed together at their extremities so as to form a closed polygon, and a force applied to each side perpendicular and proportional to it, their lines of action meeting in a point. Prove that, if equilibrium be maintained, the polygon will be inscribable in a circle, and, if S be the point through which the forces act, O the centre of the circumscribed circle, and SO be produced to S′ so that SS′ is bisected in O, the stress at any angular point of the polygon will be perpendicular and proportional to the distance of the point from S′.

Solution by SONTI V. RAMANUNTY, B.A.



Transfer the forces to act at the middle points of the sides introducing the required couples.

Let the polygon be ABC .... Let X be the mid-point of AB, Y of BC. Draw SN perpendicular to AB. Then, the moment of the resultant couple introduced

$$= \Sigma AB.NX = \tfrac{1}{2}\Sigma(SA^2 - SB^2) = 0.$$

Therefore the polygon is in equilibrium under the action of forces at the mid-points of the sides proportional to and acting perpendicularly to the sides.

Therefore, by Routh's *Analytical Statics*, Vol. I., Art. 133, the polygon is inscribable in a circle.

Let AT, BT be the directions of the reactions at A, B. Evidently they must meet on SN (at T).

Draw AS′, BS′ perpendicular to AT, BT cutting at S′. Draw S′M perpendicular to AB. Then, because the angles A, B are right angles, it can be easily shown that AN = BM; therefore NX = MX. Therefore, if O be the circum-centre, OX bisects SS′. Similarly OY bisects SS′. Therefore O is the mid-point of SS′. And, because the sides of the triangle ABS′ are perpendicular to the forces on AB, and because AB is proportional to force along SN, therefore S′A, S′B are proportional (and we know perpendicular, too, by construction) to the reactions at A, B.

16551. (Hon. G. R. DICK, M.A.)—Solve by simple quadratic methods and exhibit the roots of the biquadratic $x^4 + 4x^3 = 1$.

Solutions (I.) *by* HENRY RIDDELL, M.E., C. M. ROSS, *and* F. G. W. BROWN, B.Sc., L.C.P.; (II.) *by* Lieut.-Col. ALLAN CUNNINGHAM, R.E.; (III.) *by* Professor SANJANA, M.A.

(I.) $$x^4 + 4x^3 - 1 = (x^2 + 2x - 1)^2 - 2(x-1)^2.$$

Therefore $$(x^2 + 2x - 1) = \pm\sqrt{2}(x-1);$$

and we have two quadratics:

(i.) $x^2 + (2-\sqrt{2})x - (1-\sqrt{2}) = 0$; (ii.) $x^2 + (2+\sqrt{2})x - (1+\sqrt{2}) = 0$.

(i.) $x = -\frac{1}{2}\{(2-\sqrt{2}) \pm \sqrt{(10-8\sqrt{2})}\}$;

(ii.) $x = -\frac{1}{2}\{(2+\sqrt{2}) \pm \sqrt{(10+8\sqrt{2})}\}$.

[Mr. C. M. Ross remarks that the above equation is only a particular case of the type $x^4 + 2ax^3 + (b^2-a^2)^3/4b^2 = 0$,

which may be thrown into the form

$$\{x^2 + ax + \tfrac{1}{2}(b^2-a^2)\}^2 = \{bx + a(b^2-a^2)/2b\}^2.$$

This method of solution is given in Wolstenholme's *Problems*, No. 132.]

(II.) Taking $x = 1/y$, the equation becomes $y^4 - 4y - 1 = 0$. Assume this to be a product of two 2-ic factors $(y^2 + \alpha y + \beta)(y^2 + Ay + B)$.

Identifying these term by term,

$$\alpha + A = 0, \quad \alpha A + \beta + B = 0, \quad \alpha B + \beta A = -4, \quad \beta B = -1 \ldots (1,2,3,4).$$

Eliminating A gives

$$-\alpha^2 + \beta + B = 0, \quad \alpha(B-\beta) = -4, \quad \beta B = -1 \ldots\ldots (5,6,7).$$

Eliminating B gives $\alpha^2 = \beta - 1/\beta$, $\alpha(\beta + 1/\beta) = 4$ ..... (8, 9).

Eliminating α gives $(\beta + 1/\beta)^2(\beta - 1/\beta) = 16$ ..... (10).

Writing $\beta - 1/\beta = z$, equation (10) becomes $z^3 + 4z = 16$, the real root of which is $z = 2$, so that $\beta - 1/\beta = 2$. Hence

$$\beta = \sqrt{2} + 1, \quad B = -1/\beta = 1 - \sqrt{2}, \quad \alpha = \sqrt{2}, \quad A = -\sqrt{2},$$

so that the factors are

$$(y^2 + \sqrt{2}\,y + 1 + \sqrt{2})(y^2 - \sqrt{2}\,y + 1 - \sqrt{2});$$

the roots of which are (by ordinary 2-ic work)

$$y = 1/\sqrt{2}\{-1 \pm \sqrt{(-1-2\sqrt{2})}\}, \quad 1/\sqrt{2}\{1 \pm \sqrt{(2\sqrt{2}-1)}\};$$

two imaginary and two real. The reciprocals of these are the roots required ($x = 1/y$).

(III.) Adding $2x^2 - 4x + 1$ to the two sides, we have

$$x^4 + 4x^3 + 2x^2 - 4x + 1 = 2(x^2 - 2x + 1);$$

whence $$x^2 + 2x - 1 = \pm\sqrt{2}(x-1).$$

The roots of the given equation are the roots of these two quadratics: the expression to be added may be obtained by Ferrari's method.

Adopting Descartes' method, we may, from the form of the given equation, assume

$$x^4 + 4x^3 - 1 \equiv \{x^2 + (2+\sqrt{\alpha})x + p\}\{x^2 + (2-\sqrt{\alpha})x + q\}.$$

From this, by identifying coefficients, we get for α the cubic $(\alpha-4)^3 + 4\alpha = 0$, which gives $\alpha = 2$, so that $p = -(\sqrt{2}+1)$ and $q = \sqrt{2} - 1$; this is the same result as above. The reducing cubic $\alpha^3 - 12\alpha^2 + 52\alpha - 64 = 0$ can be transformed by the substitution $\alpha = 4(\theta + 1)$ to $4\theta^3 + \theta + 1 = 0$, which will be found to be the cubic obtained by employing Euler's solution by radicals.

11701. (Professor BÔCHER.)—Solve the differential equations—

$$\frac{d^2y}{dx^2} + \tfrac{1}{2}\left(\frac{1}{x-a} + \frac{1}{x-b}\right)\frac{dy}{dx} - \frac{1}{4(x-a)(x-b)}\,y = 0,$$

$$\frac{d^2y}{dx^2} + \tfrac{1}{2}\left(\frac{1}{x-a} + \frac{1}{x-b} + \frac{1}{x-c}\right)\frac{dy}{dx} + \frac{-3x+a+b+c}{16(x-a)(x-b)(x-c)}\,y = 0.$$

Solutions (I.) *by* Hon. G. R. DICK, M.A.; (II.) *by* G. N. WATSON, B.A.; (III.) *by* A. H. S. GILLSON.

(I.) (1) In the first equation put $x - \frac{1}{2}(a+b) = \xi\,[\frac{1}{2}(a+b)]$, and it takes the known form $$(\xi^2 - 1)\frac{d^2y}{d\xi^2} + \xi\frac{dy}{d\xi} - \tfrac{1}{4}y = 0.$$

The solution of this equation is

$$y = C_1 \sin(\tfrac{1}{2}\sin^{-1}\xi) + C_2\cos(\tfrac{1}{2}\sin^{-1}\xi);$$

or, replacing for ξ its value in terms of x, we get the general solution of (1) $$y = C_1 \sin\left(\tfrac{1}{2}\sin^{-1}\frac{2x-a-b}{a-b}\right) + C_2\cos\left(\tfrac{1}{2}\sin^{-1}\frac{2x-a-b}{a-b}\right),$$

C_1 and C_2 being two arbitrary constants.

(2) The second equation may be solved by the method (founded on one of Euler's) developed by Dr. J. H. Graf (*Mathematische Annalen*, Vol. XLV.). It consists in effect of setting

$$y = \int \frac{P(t-x)^n\,dt}{(t-a)(t-b)(t-c)},$$

with the condition $[P(t-x)^{n+1}] = 0$ between the limits.

For the equation

$$(x^3 + \alpha x^2 + \beta x + \gamma)\,d^2y/dx^2 - 2(n-1)(x^2 + \delta n + \epsilon)\,dy/dx + n(n-1)(x + 2\delta - a)\,y = 0$$

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the following results are obtained :—

$$\frac{d\log P}{dt} = -(n-1)\frac{t^2+2t(a-\delta)+\beta-2\epsilon}{t^3+at^2+\beta t+\gamma}, \qquad y = \int \frac{(n-1)P(t-x)^n\,dt}{t^3+at^2+\beta t+\gamma},$$

with the condition $[P(t-x)^{n-1}] = 0$.

Comparing with the given equation, we find that we may take $n = \frac{1}{2}$, and we get $P = [(t-a)(t-b)(t-c)]^{\frac{1}{2}}$.

Now $[(t-a)(t-b)(t-c)(t-x)^{-3}]^{\frac{1}{2}}$

vanishes when the limits are two of the roots a, b, c.

Thus we get for the general solution

$$y = C_1\int_a^b [(t-a)(t-b)(t-c)]^{-\frac{1}{2}}(t-x)^{\frac{1}{2}}\,dt + C_2\int_a^c [(t-a)(t-b)(t-c)]^{-\frac{1}{2}}(t-x)^{\frac{1}{2}}\,dt,$$

where C_1 and C_2 are arbitrary constants.

(II.) (1) This is the differential equation satisfied by Riemann's P function

$$P\begin{Bmatrix} a & b & \infty & \\ 0 & 0 & \frac{1}{2} & x \\ \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} & \end{Bmatrix} = (x-a)^{\frac{1}{2}}P\begin{Bmatrix} a & b & \infty & \\ 0 & 0 & 0 & x \\ -\frac{1}{2} & \frac{1}{2} & 1 & \end{Bmatrix}.$$

Hence one solution is $y = (x-a)^{\frac{1}{2}}$; hence, by symmetry, the general solution is $y = A(x-a)^{\frac{1}{2}} + B(x-b)^{\frac{1}{2}}$,

where A and B are arbitrary constants.

(2) Put $y = w(x-a)^{\frac{1}{2}}$, and the equation becomes

$$\frac{d^2w}{dx^2} + \frac{1}{2}\left\{\frac{2}{x-a} + \frac{1}{x-b} + \frac{1}{x-c}\right\}\frac{dw}{dx} + \left\{-\frac{1}{16}\frac{(a-b)(a-c)}{x-a}\right\}\frac{w}{(x-a)(x-b)(x-c)} = 0.$$

This is the equation satisfied by Riemann's P function

$$P\begin{Bmatrix} a & b & c & \\ \frac{1}{4} & 0 & 0 & x \\ -\frac{1}{4} & \frac{1}{2} & \frac{1}{2} & \end{Bmatrix},$$

so that, putting $z = \dfrac{(x-c)(b-a)}{(x-a)(b-c)}$, we have

$$w = AF(-\tfrac{1}{4}, \tfrac{1}{4}; \tfrac{1}{2}; z) + Bz^{\frac{1}{2}}F[\tfrac{1}{4}, \tfrac{3}{4}; \tfrac{3}{2}; z],$$

where F denotes the hypergeometric series of Gauss; hence (Forsyth, *Differential Equations*, p. 226)

$$w = A'[1+(1-z)^{\frac{1}{2}}]^{\frac{1}{2}} + B'[1-(1-z)^{\frac{1}{2}}]^{\frac{1}{2}},$$

so that $y = A''\left\{[(x-a)(b-c)]^{\frac{1}{2}} + [(x-b)(c-a)]^{\frac{1}{2}}\right\}^{\frac{1}{2}} + B''\left\{[(x-a)(b-c)]^{\frac{1}{2}} - [(x-b)(c-a)]^{\frac{1}{2}}\right\}^{\frac{1}{2}}$,

the A's and B's being arbitrary constants. [Rest in *Reprint*.]

16541. (W. Austin Sleigh, B.A. Suggested by Question 15977.)—If O, L, M be the centres of the circles SPS′, GC*g*, GC*t*, prove that the sum of the squares of the radii of these last two is half the sum of the squares of OG, O*g*.

Solution by the Proposer.

Clearly L, M, O are the mid-points of G*g*, G*t*, *tg*; hence GLOM is a parallelogram. Therefore $LG^2 + MG^2 = \frac{1}{2}(LM^2 + OG^2) = \frac{1}{2}(Og^2 + OG^2)$.

16594. (A. M. Nesbitt, M.A.)—If, within the angle A of a triangle ABC, two lines be drawn AL, AL′, equally inclined to AB and AC respectively, and meeting BC in L, L′; and if the same be done for the other angles, prove (1) that a conic S will pass through the six points L, L′, ...; (2) that a conic S′ will touch the six lines AL, AL′, ...; (3) that a conic may be drawn through the four intersections of S, S′, which shall also touch the sides of ABC; (4) that a conic may be drawn touching the four common tangents of S and S′ which shall also circumscribe ABC.

Solution by the Proposer.

If $y = lz$, $ly = z$ be the equations to AL, AL′, and so all round, the equation to S is $\Sigma x^2 - 2\Sigma\lambda yz = 0$, where $2\lambda = l + 1/l$, ..., and that to S′ is readily found to be

$$\Sigma[(1-\lambda^2)x^2] + 2\Sigma[(\mu\nu-\lambda)yz] = 0,$$

and the intersections of these lie on the conic $\Sigma\lambda^2x^2 - 2\Sigma\mu\nu yz = 0$, which touches the sides of ABC. Moreover, the tangential equation to S is $\Sigma(1-\lambda^2)p^2 + 2\Sigma[(\mu\nu+\lambda)qr] = 0$,

and that to S′ is $(1-\Sigma\lambda^2+2\lambda\mu\nu)[\Sigma p^2 + 2\Sigma\lambda qr] = 0$,

and the common tangents of these touch also the conic

$$\Sigma\lambda^2p^2 - 2\Sigma\mu\nu qr = 0,$$

which circumscribes ABC.

QUESTIONS FOR SOLUTION.

16677. (D. Biddle.)—A right hollow cylinder of length l and internal radius r has one extremity closed by a thin film. A parallel plane lies in the opposite direction at a distance nl from the film; and, if on this plane a circle be described having its centre on the axis of the cylinder and $R = (2n-1)r$, some part of the film will be visible through the tube, from any point within that circle. Find the mean area of film visible from points in any one such circle.

16678. (Pulinbihari Das, M.A.)—If

$$I = \int_0^{\frac{1}{4}\pi} (\log\sin x)^2\,dx \quad \text{and} \quad I' = \int_0^{\frac{1}{2}\pi} \log\sin x \log\cos x\,dx,$$

then $I + 2I' = 3\pi(\log 2)^2/2$ and $I - I' = \frac{1}{16}\pi^3$.

16679. (R. Chartres.)—Evaluate

$$\sum_1^\infty \frac{[1.3.5\ldots(2n-1)]^2}{(2n+2)!}.$$

16680. (Professor E. Hernández.)—

$$\left.\begin{aligned} a_1x_1 + a_2x_2 + \ldots + a_nx_n &= a_1 \\ a_1x_2 + a_2x_3 + \ldots + a_nx_1 &= a_2 \\ \ldots\quad\ldots\quad\ldots\quad\ldots &\quad\ldots \\ a_1x_n + a_2x_1 + \ldots + a_nx_{n-1} &= a_n \end{aligned}\right\}.$$

étant un système des équations dont les coefficients $a_1, a_2, \ldots a_n$ forment une progression géométrique de raison g, montrer que l'on a

$$\frac{x_1}{a_1-ga_2} = \frac{x_2}{a_2-ga_3} = \ldots = \frac{x_n}{a_n-ga_1}.$$

16681. (Professor E. B. Escott.)—In the polynomial X^3-X-1 if we replace X by aX^2+bX+c, we may chose a, b, and c so that the polynomial has algebraic factors. In this way, factor completely X^3-X-1 when X = 47, 458, 322, also when X = 18, 395, 522.

16682. (T. Stuart, D.Sc.)—Prove that the number of properly primitive classes of the determinant $D = -\lambda = 1 \pmod 4$ when λ is a prime, is

$$[\tfrac{1}{8}(\lambda+1)]^{-1}B_{\frac{1}{4}(\lambda+1)} \text{ or } -[\tfrac{1}{8}(\lambda+1)]^{-1}B_{\frac{1}{4}(\lambda+1)} \bmod \lambda,$$

according as $\lambda = 7$ or $3 \pmod 8$, B_n being nth Bernoullian number.

16683. (Professor Neuberg.)—Éliminer les constantes a, b, c, m, n, p de l'équation $y = ae^{mx} + be^{nx} + ce^{px}$ en formant les dérivées y', y'', ...

16684. (R. F. Davis, M.A.)—Solve the equations

$$abc(y^2+z^2-x^2) + (b^2+c^2-a^2)(ayz+bzx+cxy) = 2bcP,$$
$$abc(z^2+x^2-y^2) + (c^2+a^2-b^2)(\ldots\ldots\ldots\ldots) = 2caQ,$$
$$abc(x^2+y^2-z^2) + (a^2+b^2-c^2)(\ldots\ldots\ldots\ldots) = 2abR.$$

16685. (R. J. Dallas.)—Given four non-intersecting lines in space; if a plane cut them in A_1, A_2, B_1, B_2, and A_1B_1, A_2B_2 meet in O, then O is the null point of the plane *when the four lines are all generators of one quadric*, so that, if the plane passes through a fixed point, all the points O lie on a fixed plane. Show, *if this hyperboloidal relation is not fulfilled*, that locus of points O, for all planes passing through a fixed point P, is a cubic surface, on which P is point of contact of a triple tangent plane. Explain the degeneration that takes place when the hyperboloidal condition is fulfilled.

16686. (Professor Langhorne Orchard, M.A., B.Sc.)—If the sphere $x^2+y^2+z^2 = 1$ moves with its centre in the plane of yz, find its envelope.

16687. (W. F. Beard, M.A.)—TQ, TQ′ are tangents to an ellipse, centre C, foci S, S′, such that the circle TQQ′ touches the ellipse again at P. If QQ′ meets the tangent at P at X, prove that (i.) XT touches the circle; (ii.) TP is half the central chord of curvature at P; (iii.) the centre of curvature at P lies on the circle TQQ′; (iv.) T lies on the circle SPS′; (v.) CP.CT = CS².

16688. (V. Ramaswami Aiyar, M.A.)—Given a conic Y, of focus S, semi-axis major a, and eccentricity e. With any point P as focus, and the minor axis of Y for directrix, a conic Y′ is described with eccentricity equal to PS/a. Show that triangles may be inscribed in Y′ so as to circumscribe Y; and that the pedal circles of these triangles with respect to P are all equal, their diameters being equal to PS/e.

16689. (C. E. Youngman, M.A.)—Through a point O in a triangle ABC passes a transversal DEF. Prove that the three circles through OD, OE, OF, touching in turn OA, OB, OC, are coaxal, meeting again at P; and when O is equidistant from BC, CA, AB, the circle ABC also goes through P.

16690. (S. G. Soal.)—Show that the three vertices of a triangle, its circum-centre, orthocentre, symmedian point, and the isogonal conjugate of its nine-point centre are seven points on a conic.

16691. (A. M. Nesbitt, M.A.)—A, B, C are three fixed points in a straight line, and XCY is a fixed line through C. Find two points P, Q, on XY, such that B shall be the in-centre of the triangle AXY.

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16692. (I. ARNOLD.)—Given the difference of the sides, the perpendicular on the base, and the vertical angle, to construct the triangle.

16693. (T. K. VENKATARAMAN, M.A. Suggested by Quest. 16580.)—Find the necessary relation between the sides of a quadrilateral if the diagonals are perpendicular, and with that condition, show geometrically that all rectangles circumscribing the quadrilateral are similar.

16694. (Professor SANJÁNA, M.A.)—Prove geometrically that

$$\tan^{-1}(\sqrt{m^2+n^2}-n)/m+\tan^{-1}(\sqrt{m^2+n^2}-m)/n=\tfrac{1}{2}\pi.$$

16695. (F. G. W. BROWN, B.Sc., L.C.P.)—If, in a triangle ABC,

$$2(3b^2-2ac)\cos A\cos C=(5b-4c)(4c-3b)\cos B,$$

prove that the sides a, b, c are in Arithmetical Progression.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10811. (D. BIDDLE.)—There are two concentric circles of known radius. On a diameter of the larger draw a right-angled triangle with apex on the circumference, so that a tangent to the smaller from the foot of the perpendicular (between apex and base) shall be parallel to one of the sides.

11403. (Professor RAMASWAMI AIYAR, M.A.)—If $u=0$ and $v=0$ be given equilateral hyperbolas, prove that, if any two conics of the system $au+bv+c=0$ touch each other, the point of contact lies upon a fixed circle; and the locus of their two points of intersection is a three-cusped hypocycloid; and all the straight lines represented by the system are tangents to this hypocycloid.

11573. (H. J. WOODALL.)—Required a linkage to describe a parabola of the nth degree, $y=x^n$, but particularly the curve of adiabatic expansion.

11647. (Professor CAYLEY, F.R.S.)—For what transcendental forms of the function ϕ does the equation $\phi(x)\,\phi(y)=1$ establish an algebraical relation between x and y?

[Professor Cayley states that he has no solution, but that the problem is really one of importance and that an obvious instance is $\phi(x)=e^x$, $e^x.e^y=1$, *i.e.* $x+y=0$.]

11817. (ELIZABETH BLACKWOOD.)—Forces act along generating lines of a hyperboloid at equidistant points of the principal circular section. Consecutive generators are of opposite systems, and the forces act in the positive direction of the generators. If the forces be equal and their number even, show that they are in equilibrium; if their number be odd, find resultant.

11832. (Professor NEUBERG.)—Trouver l'équation aux dérivées partielles d'une surface telle que la section par un plan mené par l'axe OZ soit une hyperbole ayant pour asymptotes OZ et l'intersection de son plan avec le plan XOY.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, June 10th, 1909.—Sir W. D. Niven, President, in the Chair.

The following papers were communicated :—

"On the Behaviour at the Poles of a Series of Legendre's Functions representing a Function with Infinite Discontinuities," Mr. F. J. W. Whipple.

"An Analogue of Pascal's Theorem in Three Dimensions," Mr. W. H. Salmon.

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The Educational Times.

Compulsory Continuation Schools

THE Consultative Committee, after some fifteen months' hard labour, have produced their Report on Continuation Schools—a volume of nearly three hundred and fifty pages packed with matter calculated to induce serious reflection. The Scottish Education Bill of last year contained a clause requiring Local Authorities to provide continuation schools and investing them with powers to make by-laws compelling the attendance of young folk up to seventeen years of age. The Consultative Committee was charged to investigate the whole problem of continuation schools and in particular to advise on the applicability of the Scottish compulsory clause to England and Wales. The Committee ransack the records of the past two centuries: they go back to the Sunday schools of Jean Baptiste de la Salle in Paris in 1690 and to the first evening schools in England in 1711; and they come down to the schools established by some of the great firms of to-day for the young workers in connexion with their establishments. In the result, they find themselves compelled to recommend compulsion. Here we seem to be entering on a distinctive phase in the progress of our educational development.

It appears, then, that more than 200,000 children leave school under fourteen, and that somewhere about 2,000,000—ten times as many—do not see the inside of a school between fourteen and seventeen. The gross abuse of all these important formative years is all too obvious to every wakeful eye; and enterprising students of economics have made careful observations reducing the facts of limited but representative areas to definite statistical form. It is not merely that the specific facts learnt at school fade from the careless mind or evaporate into vacancy: the new practical acquisitions are generally of negligible, if not of negative, value, and the lack of direction and control tends to arbitrary change of occupation with intervals of idleness, with the disastrous consequence that no basis is established for later permanence and progress. Here, then, we are confronted with a melancholy waste of school training, a vast reduction of industrial efficiency, a lamentable deterioration of character, an inevitable obscuration of civic responsibility, and an incalculable augmentation of social discomfort and distress. We have unveiled to us what seems to be one of the more potent causes of the degeneration noted by sociologists in certain of the social areas and strata, especially in our large cities, and justly pronounced by them to be a grave and growing danger to the community.

Probably no thinking person doubts the general proposition, but it needs some familiarity with individual facts, or at least some imagination, to get beyond an apathetic acquiescence to a fruitful realization of the position. We offer two examples from the investigations of Mr. R. H. Tawney, Lecturer in Economics in the University of Glasgow. The first is the case of a boy that left school at eleven, and following are the particulars of his first six places:—

> Delivering milk at 4s. a week, stayed three months; left because of a quarrel. Message boy, 6s. and uniform, six months. Message boy, 7s., two months; "sacked" for destroying instead of delivering messages. Message boy, 5s., seven months; "found work too heavy." Van boy, 8s., over a year; left because of a "row." Weaving mill, working with drawer and serving him with yarn, 8s. 6d., two years; mill failed.

The next is the case of a boy that left school at twelve, and these are the particulars of his first six places:—

> Van boy, 5s., three weeks; left because "fed up." Van boy, 7s. 6d., four months; left because "tired of job." Lorry boy in brewery, 5s. one month; left because "tired of job." Message boy, 6s. 6d., one week; left because he was hurt, and was idle for six months. Driving van, 8s., six weeks; left because "he did not get enough for driving horses" (the substitution of boys for men as drivers is one of the complaints of the Carters' Union). Saw-mills, "drawing-off machine," 9s., three months; left because he wanted "more money," and went to be a "trace boy."

The first boy went through half-a-dozen places in four and a half years (11 to 15½); the second boy went through half-a-dozen places in less than a year and a half (12 to 13½), including half a year of idleness. They barely made a living. How much did they learn to fit them for any permanent or decently remunerative or in any sense effective place in the industrial organization? What were the moral effects of their occupations and of their associations? If these are typical examples, there needs no further argument. But it is not boys alone that are concerned: the Committee note that the industrial development is "proceeding at the cost of the exploitation of our girls as well as of our boys."

What is the remedy, then? Naturally, the Committee look around to discover the easiest means of amelioration. They turn first to the day schools. The size of the classes

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should be reduced: that would issue in more thorough and durable learning. Children should attend up to thirteen without admissible exemption, whether full time or half time; and, after a short interval, exemption should be prohibited, with certain exceptions, up to the age of fourteen. In rural districts, however, girls that are required to help at home might be allowed to attend half time from thirteen to fifteen instead of full time up to fourteen. But no boy or girl should be allowed to leave the day school under sixteen, unless the parents can show that they are, and continue to be, suitably employed. The difficulty will be to accommodate these requirements with the necessities of parents and with the demands of employers; and perhaps the later school work will have to take on a more largely practical character in view of the openings in local industries. Junior employment registries are proposed, to furnish skilled advice to parents, managers, and teachers, in the selection of suitable occupations for the children and in the determination of such further courses of instruction as will help to qualify them for skilled employment; such registries to be allied with any future system of adult labour bureaux and to be subsidized by public funds. The general idea seems to be to make the most of the day-school facilities and to bring all the interested parties—parents, school managers, teachers, and employers—into intelligent co-operation for the preparation and guidance of the children into one or other line of useful and progressive work, and to shut them off from the roads that lead to indiscipline and idleness, futility, unemployment, distress, and not improbably crime.

Yet, with all the aid of available voluntary agencies, the Committee are driven to recommend compulsion, after the fashion of the Scottish clause. They would make it the statutory duty of the Local Education Authority to provide continuation schools for young persons up to the age of seventeen, to keep a register of all such persons, with a record of their occupations, and to make by-laws for compelling the attendance of such as are not otherwise receiving a suitable education. At the same time they would make it the statutory duty of employers to provide sufficient time for young persons in their employment to attend these schools, and to refrain from employing any young person that should fail to produce periodically a card vouching for his or her regular attendance at a continuation school Apart from the social difficulties of such a reform, which will require discreet and patient handling, there is the ever present difficulty of expense. It is calculated that fully £3,000,000 would be necessary for a year's operations, not including the cost of provision of premises. After all, this works out at less than a shilling a head per school week; and the training must be of the feeblest description if the investment fail to return an enormous percentage, apart altogether from moral and social amelioration.

NOTES.

In place of the system of apprenticeship "one finds," says the *Electrical Engineer*, "such an enormous expansion of technical education, and so rapid a multiplication of centres of technical instruction, that one is apt to pause to inquire whether the object of technical education, State-aided and otherwise, is not being defeated by teaching the 'art' of the various trades—that is, by communicating mere trade knowledge—instead of so directing instruction that it should exercise the brain power of the student." Our contemporary quotes Prof. Karl Pearson: "Mechanical skill, the trick of the trade," said Prof. Pearson, "may be learnt best in the workshop; facts and formulæ may be found in books; processes may be followed in the foundry and the weaving shed in a manner that can only be mimicked in the schools; but true 'scouting' can be learnt only from a master scout, and here arises the real value of a band of men trained to observe and reason. This is why we want scientific schools and men of science if the nation is to maintain its position." We want the highest development of pure science in the Universities, and of applied science in the technological institutions. When we come to the studies of artisans in evening classes, it seems plain that the tendency remarked by our contemporary requires to be carefully watched and counteracted. The difficulty is to keep the scientific aspect of a subject in due prominence, while at the same time attending adequately to the practical applications: so much depends upon the judgment of the teacher for a just balance. We are glad to learn that such classes "are very largely supported by manufacturers"; we suspect there is only too much room for still larger support. But there is another difficulty—the difficulty of the sensible manufacturer when his trained scientific man and his workman worry him with silly squabbles of mutual contempt. The workman may be pardoned for smiling at the practical ignorance of the student, but the student ought surely to have supercilious notions knocked out of him in the course of his training. There are not wanting indications that some independent inquiry into the whole system of technical instruction is needed to clarify the situation.

St. Paul's is to be cordially congratulated on its celebration of its quatercentenary. Whether it might historically claim a hoarier antiquity or not, one may safely predict for it many more centuries of eminent usefulness. Its close relations with Oxford naturally brought the Chancellor to officiate at the opening of the new science buildings. Every one will appreciate his reference to Mr. Walker as "one of the great public-school masters of the nineteenth century," and regret that Mr. Walker's health prevented his attendance. Lord Curzon said he was struck "by the almost unparalleled number of distinguished pupils turned out by St. Paul's"—Milton and Marlborough, the immortal Pepys, a couple of Lord Chancellors, a Speaker of the House of Commons, three great antiquaries, a score of bishops, and so forth. Really a large and rich foundation in the heart of the capital of the Empire might fairly be expected to take in and to turn out a not inconsiderable number of considerable personages in the course of four centuries. We confess we have no great sympathy with any but the most modest claim of great men by schools or other institutions in which they have happened to pass a year or two of their youth, unless formative influences are very specifically traced to the connexion. However, why should folk be downhearted?

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Lord Curzon, fired by the familiar contemplation of "the men that do the work and sustain the fabric of the British Empire," proceeded to lash the pessimists. By all means lash the pessimists that cannot show solid reasons for their pessimism; but let us attend very carefully to the pessimists that base their outcry upon easily ascertained and indisputable facts. Without the least pessimism, one sometimes doubts whether self-laudation does not imperiously demand the lash. "Foreign critics," said Lord Curzon, "with all the advantages of their superior scientific equipment and excellent organization, are always coming to English public schools to see how they can combine with the great educational superiority which they enjoy that training in character, that sense of moral responsibility, that spirit of civic patriotism," and all the rest of it, "which are among the chief and honourable characteristics of the English public-school system." Indeed! Does Lord Curzon—or anybody else—believe for one moment that character, moral responsibility, civic patriotism, and so forth, are the monopoly of our public schools or of our own country either?

In view of demands for more and more Dreadnoughts and of other demonstrations of Imperial resolution or uneasiness, some remarks of Mr. J. T. R. Alexander in a lecture on "Student Life in a German University," recently delivered at Northwich Grammar School, deserve sober attention. "German University life," he justly said, "is of vital interest to all Englishmen that have the welfare of their country at heart." Its essential lesson touches us nearly. Mr. Alexander, who has been studying at Würzburg, claims to know "what the Germans are doing and something of what they hope to do," and he quite agrees that "England is in danger—great danger." In this way:

> The Germans (he said) had a well arranged plan for conquering the world, and were developing it with relentless tenacity, but that plan was to win not sea fights, but trade fights. They did not mean to invade this land with armed hosts, but they meant to win and to hold the trade of the world and the wealth that followed it. It was not a question to his mind as to whether war would break out between England and Germany. War was declared years ago when the great German ship "Kaiser und König" sailed up Southampton Water on her maiden voyage to New York. England had greeted Germany's attempt to become a manufacturing nation by the well known gibe, "Made in Germany." That great ship had been entirely produced in the Fatherland, and as she steamed past Portsmouth her crew hung out over her bows a great white sheet on which they had written in large letters the words, "Made in Germany." That was a declaration of war—the war which Germany meant, had meant, and had every right to mean. If they built fifty Dreadnoughts to each one of the Germans, the real danger would still be there. Germany was arming her people with the sword, and she was also arming them with highly trained intelligence. She meant to win by intelligence and to defend with the sword. England was increasing her armaments, but was not sufficiently arming the nation for the scientific and commercial war which was Germany's great effort. He was amazed that this nation did not realize more keenly the urgent need for a higher standard of general and specialized education in this country.

Whatever be the true diagnosis of Dreadnoughts, there can be no question about the necessity of strengthening the scientific and commercial defence. To this end the cost of a single Dreadnought, judiciously administered, would go a considerable way. Only we are so apt to be wise after the event. One gets tired of repeating an obvious lesson.

The British University Students' Congress, which was held the other week within the venerable precincts of the University of Durham, exhibited a useful activity, and suggested a higher significance than it has hitherto been credited with. The absence of representatives from Oxford and Cambridge is to be regretted: we should hope there is some better reason for it than the allegation that "the modernism of the movement prejudices against it Universities which wear with pride the rusty fetters of tradition"—some reason based rather upon other differences of a more substantial character. One of the grievances discussed throws a curious sidelight upon British and Continental academic estimates. Some British graduates—graduates of distinction, it is alleged—hanker after the degree of Ph.D. The privilege of exemption from attendance during two semesters (out of the full three years' course), which used to be granted in consideration of a British degree, was recently withdrawn by German and Swiss Universities. Neuchâtel and Zürich have again made the concession, but the Germans hold to their opinion that a British honours degree, or a double degree, should count only as a matriculation examination. The Congress, therefore, invokes the Foreign Office to bring Germany to reason. Another interesting point under discussion was the relative value of the lecture and tutorial systems. It seems clear enough that a professor cannot lecture efficiently to a mob of several hundred students of different stages of acquirement and ability, except upon the more general aspects of his subject. The tutorial method obviously brings teacher and pupil into more profitable relationship. It is anything but surprising, then, that the Congress carried a resolution in favour of a supplemental system of tutorial instruction after the model of the German and American seminar. The practical difficulty, as usual, will be the want of money to carry the plan into operation; but it will have to be got over somehow. The annual confabulation of students from diverse centres is good; better still is the influence of their discussions upon academic methods that usually arise without much consideration of the student and tend steadily to get stereotyped.

Last month we drew attention to Baron Kikuchi's elaborate exposition of the system and history of Japanese education. Now it is reported that substantial changes are imminent, under pressure of the general opinion that Japan cannot, under the present conditions, compete successfully with Occidentals. The greatest difficulty of all is found in the extreme complexity of the native language, which Baron Kikuchi has impressively illustrated. To this is added the effort of learning two Western languages — English and either German or French; and on the top of the linguistic drudgery comes the study of technical subjects. The consequence appears to be that a diligent student has little chance of graduating at an Imperial University till he is twenty-three or twenty-four, while a very large number consider themselves fortunate if they secure their degree before thirty. In many cases the labour of learning leads to exhaustion of physical power: "many students, after graduation at the University, find themselves quite unfit to enter upon the duties of life with the energy that is essential to success." Nor, after all, is efficiency in the prescribed studies always secured. We have heard of this sort of

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experience before, outside Japan. So something will have to be thrown overboard to lighten the ship. The victim generally selected is one of the Western languages. The Minister of Education is said to be preparing to submit proposals of reform to the consideration of the High Council of Education.

SUMMARY OF THE MONTH.

THE programme of the Summer School of University Extension students, to be held at Oxford, July 30 to August 23, is disposed in three main sections: (1) the general scheme is intended to illustrate the place of Italy in world history and its contributions to literature, art, science and thought; (2) another section is devoted to political and economic science, including a course of lectures on "The Problem of Industrial Peace" and a course on "English Political Institutions"; (3) there is also a special section designed for foreign teachers, including lecture classes in phonetics and the English language. Finally, special classes have been arranged in practical map-making, in the theory and practice of teaching (in which Prof. Sadler will take part), and in the Italian language.

BEDFORD COLLEGE FOR WOMEN (University of London) celebrated the sixtieth anniversary of its foundation by a garden party at South Villa, York Gate, Regent's Park, where the new buildings are to be erected. It was founded in 1849 by Mrs. Elizabeth Jesser Reid. In the first session George Eliot and Miss Anna Swanwick were among the 193 students. Now there are over 300 students, a large proportion of them colonial and foreign. It is the only college for women that receives a Parliamentary grant (£4,000 a year, with a further special grant of £700 this year). The L.C.C. gives it a yearly grant of £800. The plans for the new buildings include lecture rooms and laboratories for four hundred students, study bedrooms for one hundred students, a library, a large assembly hall, a gymnasium, and an art school. The cost is estimated at £80,000, and £20,000 more will be needed to meet the increased annual expenditure. Towards the sum thus required Lady Tate has generously promised £10,000 for the library, and a bequest of £12,000 from the late Mr. James Turle will be applied to the building fund. It remains to collect £80,000, but, with so satisfactory a record of past performances, and so admirable a site for the college of the future, the Council have confident hope that their appeal will meet with a generous public response. A performance of the "Electra" of Sophocles in Greek, in aid of the Building and Endowment Fund, was given at the Royal Court Theatre on July 15, 16, and 17.

THE annual distribution of prizes of the North London Collegiate School took place on July 5, the Bishop of Bristol in the chair. The Head Mistress, in her report, enumerated many successes of present and past pupils. Miss Marjorie Long, who last year was equal to the Fourth Wrangler, has this year been placed with two men in the First Class of the Mathematical Tripos, Part II. Miss Violet Cooper is the only woman in Class I. of the Natural Science Tripos, and in the list of London graduates occur the names of many old North Londoners—four in First Class Honours. With the opening of the new buildings there are greater facilities for school clubs, and the Science Club is now divided into Photographic, Gardening, and Geographical Sections. The prizes were distributed by Miss Forrest Browne. The Chairman recalled the time, only forty-five years ago, when he was one of the privileged number of men to vote that girls should be admitted to the Cambridge Local Examinations. He was later entrusted with the scheme for allowing women students at Cambridge to take the Tripos Examinations, and he recalled the two occasions on which a woman had been Senior Classic and above Senior Wrangler. He impressed on the girls that, while now the highest opportunities for scholarship were open to them, yet they should remember that woman was the decorative element in the social circle, and he hoped they would be above all things womanly.

THE summer festival of the College for Working Women (7 Fitzroy Street) was held on July 3, the Bishop of London in the chair. The thirty-fourth annual report stated that during the past year there had been a slight increase in the number of students and a considerable one in the total attendances at the classes, so that the college evenings had always been bright and full of interest. The Bishop of London, after distributing the prizes and awards, warmly congratulated the students on their successes and encouraged his young hearers to persevere in the cultivation of their minds and intellects. In the pursuit of knowledge in the many and varied directions in which facilities were offered them at the College, new interests would be brought into their lives and a joy that would ever increase. In such pursuits rich and poor were on the same level of intellectual endowment, and East and West could there meet and find an equal delight and recompense.

SPEAKING at the Conference of the Association of Teachers in Technical Institutions, which was held in Liverpool, Mr. J. Wilson, of Battersea, the president, submitted that the salaries of technical teachers should be raised at least to the level of secondary school teachers. Further, having now become practically civil servants, they should participate in the usual advantages of a superannuation fund and security of tenure. Mr. Wilson outlined a scheme for linking the elementary school, the evening continuation school, and the technical school, remarking in passing that the evening school should be serious and strenuous, and not merely a feeble competitor of the cheap music-hall. He next suggested that a Royal Commission should be appointed to deal with the organization and co-ordination of technical education in relationship to primary and secondary education. The Conference agreed to a resolution declaring for the abolition of the half-time system, and stating that to fit students for the instruction provided in technical institutions it was desirable that no child should be allowed to leave the elementary school before it was fifteen years of age. The resolution further urged that special attention should be given to the teaching of practical arithmetic, elementary science, and to manual training. The Conference heartily approved the general principles embodied in the recommendations of the Minority Report of the Poor Law Commission, that it should be illegal to employ boys below the age of fifteen or any youth below eighteen for more than thirty hours per week, and that boys should be compelled to attend some suitable institute giving physical and technical training, for not less than thirty hours per week, at periods to suit the convenience of employers in different industries.

London. THE students of University College (says the *Guardian*, July 7) are to be congratulated on the methods adopted for raising funds for their new athletic ground, for they contrived to organize a bazaar which was in every sense worthy of the dignity of the College. Every faculty gave of its best, and art, science, and archæology were all pressed into the service. The familiar buildings in Gower Street presented a very unfamiliar aspect on three days of last week. The grey old columns were hung with roses, and the students blossomed forth in fascinating costumes of the Hogarth period. Slade pupils transformed themselves into "pavement artists" and solicited the modest sum of one penny for encouragement. X-rays were also at work for a consideration, and liquid air was in readiness to entertain as well as instruct. Among the most interesting of the "side-shows" were the scenes from "The Tempest" and "Twelfth Night" in English "as she was spoke" in Shakespeare's day, Indian *tableaux* from "The Light of Asia" and the "Ramayana," and the Homeric *tableaux* arranged by the Professors of Greek and Archæology. The bazaar brought some £2,000 towards the reduction of the debt on the athletic ground. The Treasurer and the Committee at University College would gladly receive £3,000 more.

Imperial College. THE new buildings of the Imperial College of Science and Technology, the first stone of which was laid by the King on July 8, will occupy about five acres, with a frontage of about 1,000 ft. towards Prince Consort Road and of about 190 ft. towards Exhibition Road. They will accommodate the mining, metallurgical, geological, and engineering departments. The architect is Sir Aston Webb, R.A.

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Birmingham. THE new University buildings were formally opened by the King and the Queen (July 7). The Birmingham Charlottenburg, says the *Preston Guardian*, "in some respects is even in advance of its German rival. This workshop University is, so far as it goes, the finest equipped institution in the world. All the latest tools and machinery for its purposes have been supplied, and the thousand students already at work under the most skilled instructors will form the nucleus of the army which by and by will be streaming into the country and all over the Empire to build upon broader foundations our manufacturing supremacy. We cannot but think also that such a splendid school of teaching will have a marked influence upon other centres, in suggesting improvements that are needed to keep the methods and principles and results of training well abreast of modern needs as they themselves continually grow and expand. The effect, indeed, upon the whole industrial interests of the country will hardly be calculable, because it will be regularly augmenting in different places, at different times, in different ways, and in different spheres. The country will feel it and realize it without exactly understanding wherefore."

Bristol. JUST thirty-five years have elapsed since the movement was started for the foundation of University College, which has now practically been merged into the University. It was on June 11, 1874, that the public meeting was held at the Victoria Rooms at which the scheme, which had been projected by the Bishop of Hereford, then Head Master of Clifton College, was launched. The aim of the College, as then outlined, was to combine thorough technical training with general culture, and to afford instruction in ancient and modern history, languages and literature, in mathematics, in law and political economy, and in all such branches of science as could be applied to engineering, mining and metallurgy, manufactures, commerce, medicine, and pharmacy. But from the very outset the promoters had something more in view. Dr. Jowett, Master of Balliol, said the real object was the foundation of a local University, and he expressed his conviction that the citizens of Bristol, who were proud of its being a cathedral town, would be also no less proud of its being a University town. The ideas placed before the citizens in 1874 have now been realized. A start will be made with faculties of art, science, medicine, and engineering. Hitherto medicine and engineering have been carried on at University College under science, but they will now be given separate faculties. Arts will include classics, English literature, modern history, modern languages, Oriental languages, logic, economics, psychology, mathematics, and music; engineering will include civil, mechanical, electrical, mining, sanitary, and motor engineering; and the faculty of science will embrace experimental physics, chemistry, physiology, botany, and geology. The faculty of engineering will be carried on at Merchant Venturers' Technical College. It is provided that other faculties may from time to time be constituted by the University.

Aberdeen. A STATEMENT has been prepared on behalf of the Lecturers of the University of Aberdeen setting forth the case for fuller representation of their subjects on the Senatus. The matter is one which has engaged attention for some time and upon which strong feeling exists. The teaching arrangements of the University are determined by the Senatus, and under the new Acts Ordinance the powers of the Senatus are more extensive than before. The subjects taught by lecturers now bulk largely in the work of the University, but the lecturers have no seat on the Senatus, and, though they are represented on the Boards of Studies, this is held to be insufficient to secure proper attention to the interests of their subjects. The feeling has been intensified by the proceedings in connexion with the three-term session which comes into operation next winter. The complaint is that, in the arrangement of classes under the new Ordinance, the lecturers have not been fully consulted, and that matters in which they were vitally interested have been settled by the Senatus without reference to them.

Magee. MAGEE COLLEGE, Londonderry, has become affiliated with Trinity College, Dublin. It had been hoped in Belfast that Magee would become affiliated with the new Queen's University—a sectarian with a non-sectarian body. There is consequently not a little anxiety in Belfast as to the effect upon the University, and especially upon its Arts and Science faculties.

THE EDUCATIONAL LADDER.

CAMBRIDGE, GIRTON COLLEGE.—Pfeiffer Studentship (about £75): divided between Miss M. D. Brock (Classical Tripos, Part I., 1907, Class I., Division 3; Part II., 1908, Class II.) and Miss I. M. Massey (Medieval and Modern Languages Tripos, 1908, Class I., Distinction in French and German; 1909, Class II.). Studentship of £40: Miss M. Long (Mathematical Tripos, Part I., 1908, equal to Fourth Wrangler; Part II., 1909, Class I., Division 2). Fourth Year Scholarship of £40: Miss I. M. Mathews (Mathematical Tripos, Part I., 1909—old regulations—Class I., between Eighteenth and Nineteenth Wranglers). Sir Arthur Arnold Scholarship of £30: Miss H. M. Barnard (Classical Tripos, 1909, Part I., Class I., Division 3). Fourth Year Scholarship of £20: Miss M. E. Seaton (Medieval and Modern Languages Tripos, 1909, Class I., Distinction in French). Thérèse Montefiore Memorial Prize (about £66): Miss M. Long. Fanny Metcalfe Memorial Prize (£4. 10s.): Miss C. Morrison (Inter-Collegiate Examination in Modern Languages, 1909, Class I.). Pioneers' Prize for History (£2. 2s.): Miss E. E. Power (History Tripos, 1909, Part I., Class I.). Agnata Butler Prizes for Classics: Miss H. M. Barnard (£8) and Miss P. B. Mudie-Cooke (Inter-Collegiate Examination in Classics, 1909, Class I.) (£7).

CAMBRIDGE UNIVERSITY. — Charles Oldham Classical Scholarship: A. S. F. Gow, B.A., Scholar of Trinity. Burney Studentship: J. G. Walker, Jesus. Harkness Scholarship: B. Lightfoot, Scholar of Peterhouse. Craven Studentship: W. H. Duke, B.A., Scholar of Jesus. Craven Fund Grants: A. B. Adams, B.A., Scholar of Emmanuel; J. Fraser, B.A., Scholar of Trinity; and C. F. Taylor, B.A., Scholar of Emmanuel. Wiltshire Prize (Geology and Mineralogy): E. S. Pinfold, Scholar of Peterhouse; honourably mentioned, P. Stocks, King's. Studentship at the British School at Athens: Sidney W. Grose, B.A., Scholar of Christ's.

Jesus. — Kay Theological Scholarships: P. Gardener-Smith, B.A.; J. L. Beaumont-James, B.A.; C. E. O. Finch. Choral Exhibition: O. W. M. Shelton, Derby School.

St. John's.—Open exhibitions of £30 for two years.—For Classics: F. Kidd, Tonbridge School; F. B. Rees, Rossall School; G. L. Ritchie, Bedford Grammar School. For Mathematics: A. H. Rowell, Wellingborough College. For Natural Science: H. Davis, Birkbeck College; A. R. Gregory, St. Olave's Grammar School. Dowman Sizarships: F. B. Cavalier, St. Paul's School; W. M. N. Pollard, Denstone College; C. F. Smith, Birkenhead School. School Exhibitions: Dowman (Pocklington), E. H. Shepherd, Johnson (Oakham and Uppingham), E. E. Raven (Uppingham), Newcome (Grantham), K. S. Waters.

CANTERBURY, KING'S SCHOOL.—Junior King's Scholarships: H. Spence, G. R. Dawbarn, R. G. Crosse, all of King's School. Probationer King's Scholarships: R. A. F. Whistler (Cathedral Choir School, Worcester), L. W. H. Best (Mr. Hammond, Malvern House, Kearsney), B. W. Galpin (Junior King's School), R. J. Mowll (King's School), T. H. Keble (Mr. Holt, North Down Hill, Margate), G. K. Lawson (Mr. Hammond, Kearsney), D. Cockrem (Mr. Mackay, Shirley House, Watford). Entrance Scholarships: B. G. King (Mr. Waterfield, Temple Grove, Eastbourne), R. A. F. Whistler (Cathedral Choir School, Worcester), L. W. H. Best (Mr. Hammond, Kearsney). House Scholarships: D. Cockrem (Mr. Mackay, Watford), J. L. L. Johnston (Messrs. Campbell and Reece, Doon House, Westgate).

CARDIFF UNIVERSITY COLLEGE.—Science Research Scholarship, £150 (Royal Commissioners of Exhibition of 1851): Ernest Vanstone, B.Sc. Isaac Roberts Research Scholarship, £50: Ezer Griffiths, B.Sc.

CARNEGIE TRUST.—For the academic year 1909–10, there have been awarded 20 Fellowships, 30 Scholarships, and 69 Research grants—fully £8,000.

CHELTENHAM COLLEGE.—Scholarships: A. L. Pemberton, F. H. Savile, F. H. Tate, and H. E. D. Carter (Cheltenham College), C. E. Lucette (Chard Grammar School), D. R. G. Mackay (Mr. Gurney's, Brandon House, Cheltenham), D. G. McGregor and A. D. Roberts (Cheltenham College, P. G. E. Warburton (Mrs. White's, Marlborough House, Hove), B. F. C. Atkinson (Mr. Lasbrey's, Belmont House School, Blackheath), R. W. Copland (Cheltenham College, formerly Mr. Foster's, Stubbington), A. H. G. Cox (Cheltenham College, formerly Mr. Auden's, Glyngarth, Cheltenham), F. L. C. Hodson (Cheltenham College, formerly Miss Knapp's, Dursley), E. D. T. Roberts (Cheltenham College, formerly Mr. Vickers's, Scaitcliffe, Englefield Green), M. H. Gaitskell (Mr. Lushington's, Elstree), W. A. Gordon-Hall (Miss Watson Willis's, Glengorse, Eastbourne), and G. A. G. Young (Mr. Vaughan Pott's, Parkside, Ewell). James of Hereford Scholarship: H. P. Chapman (Hereford Cathedral School). Old Cheltonian Scholarship: J. V. H. Campbell (Mr. Trollope's, Tyttenhanger Lodge, St. Albans) and F. L. Eardley-Wilmot (Cheltenham College, formerly Mr. Haskoll's, Pelham House, Folkestone). Francis Wyllie Scholarship: A. D. Roberts (Cheltenham College). Special Army Scholarships: A. L. Pemberton, Southwood Scholar (Cheltenham Col-

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lege), H. E. H. Carter, Dobson Scholar (Cheltenham College), and P. G. E. Warburton, Jex-Blake Scholar (Mrs. White's, Marlborough House, Hove).

ETON.—Foundation Scholarships: F. T. K. Caröe, A. Bevir, B. J. Hubbard, S. I. Fairbairn, C. C. Maud, G. Parker-Jervis, F. S. Pemberton, N. E. P. Sutton, W. A. P. Graham, P. S. Chattaway, R. C. Durnford, J. S. Nichols, W. E. C. James, J. H. Keeling, L. A. G. Cust, C. M. J. Villiers, G. C. K. Watson, J. T. Matthey, R. S. Prior, G. W. Kindersley, R. H. Donaldson.

LEAGUE OF THE EMPIRE.—Challenge Cup inter-all Secondary Schools of the Empire, with the £5. 5s. League of the Empire Prize: J. R. Aspinall, Crossley and Porter School, Halifax, England (age 14). Challenge Cup inter-all Primary Schools of the Empire, with the £3. 3s. League of the Empire Prize: Gertrude Horton, Capland Street Higher Grade School, Marylebone, London (age 13). The Essays will be printed in the August number of the *Federal Magazine*.

LONDON: NORTH LONDON COLLEGIATE SCHOOL.—Clothworkers' Leaving Scholarship, £50 a year for three years: Ethel Steuart. Platt Scholarships, £20 each: Lilian Jones (Classics); Gladys Misick (English and History); Kate Pearce (Mathematics); Edith Jacob and Jessie Willmott (Science); Catherine Cowell, Margaret Hodgson, Doris Swinburn, and Bertha Underwood (on the results of the School Leaving Examination, Matriculation standard).

LONDON UNIVERSITY.—Lindley Studentship, £100, tenable one year in the Physiological Laboratory of the University: Mary Taylor Fraser, B.Sc. University Studentship in Physiology. £50 for one year: Gerald Roche Lynch, Demonstrator of Chemistry, St. Mary's Hospital Medical School. Gilchrist Studentship in Modern Languages: Euphemia Leys Ramsay, B.A., of University College. University Medal at M.B., B.S. Examination, May, 1909: Cecil A. Joll, B.Sc., of University College, Bristol.

London (Royal Free Hospital) School of Medicine for Women.—The Fishmongers' Company has awarded a University Exhibition of £60 a year for three years to Miss Naomi Tribe, a student of the School.

Royal Holloway College. — Scholarships of £60 for three years: Miss M. M. Bone, English (Clifton High School and private study); Miss E. A. M. Hope, French (Bangor County School); Miss I. M. I. Twells, Mathematics (Perse School, Cambridge); and Miss G. L. Whitaker, Mathematics (Warwick High School). Scholarships of £50 for three years: Miss C. M. Baines, German (North London Collegiate School); Miss I. M. Burnett, Chemistry and Botany (North London Collegiate School); Miss E. Le Seeleur, French (Jersey Ladies' College); Miss G. E. Powers, Mathematics (City of London School); Miss A. Stephens, Botany and Chemistry (Camborne County School and private study); Miss L. M. Swinburn, English (North London Collegiate School); Miss L. E. Thomas, Botany, Chemistry, Physics (Clapham High School); and Miss T. E. M. Wright, History (St. Mary's College, Paddington). *Proxime accesserunt* Miss P. P. Duncan, English (Reigate High School); Miss E. Noble, English (Milham Ford School); Miss P. C. Inman, Mathematics (Blackheath High School); Miss D. L. Barker, German (Manchester High School); and Miss A. B. Askew, English (Fulham Secondary School).

University College.—Andrews Scholarships: for students of one year's standing, £30 each—Louise W. Stone (Classics); Eileen O'Rourke (Modern Languages); R. G. Lunnon (Mathematics and Science). Second year's scholarship, £20: D. M'Donald. Carey Foster Research Prize: Caroline Schneider. Cluff Memorial Prize (£15): T. C. Graves. Ellen Watson Memorial Scholarship of £15: F. Jackson. Archibald P. Head Memorial Medal: R. A. Pfleiderer. Heimann Silver Medal: L. A. Triebel (provisional). Hollier Scholarships (£60 each). Greek: No award. Hebrew (£30 each): A. B. Greenbaum and E. M. Levy, equal. Jessel Studentship: E. M. da C. Andrade. Joseph Hume Scholarships (£20 each): Jurisprudence, R. S. Carr; *proxime accessit* M. S. Levy.—Political Economy: Mabel C. Buer. Jews' Commemoration Scholarship, £15 a year for two years: A. E. Evans. John Stuart Mill Scholarship in Philosophy of Mind and Logic, £20: E. M. Page. Malden Medal and Scholarship: second year students—G. F. Forsey; third year students—T. J. Cash. Mayer de Rothschild Scholarship in Mathematics, £42: Marion Pick. Physics Research Studentships: £60, F. Simeon; £40, B. B. Baker. Quain Law Professor's Prize, £15: M. McQuirk for Essay on "The History, Form, and Effect of the most favoured Nation Clause in Treaties." Science Scholarship (Commissioners for the Exhibition of 1851): H. E. Watson, B.Sc. Slade Scholarships in Fine Art, £35 a year for two years: M. Gertler and F. A. Helps. Melvill Nettleship Prize for Figure Composition: Elaine T. Lessore and W. L. Claus, equal. Tuffnell Scholarship in Chemistry, £80 a year for two years: H. J. Page.

School of Economics.—Hutchinson Medal (for research work): C. Ryle Fay, D.Sc. Lond., Fellow of Christ's College, Cambridge.

LONDON: UNIVERSITY COLLEGE SCHOOL.—Major Scholarships: C. P. Wright (Grammar School, Bridgnorth) and A. M. Fleming (St. John's House, Hampstead). Minor Scholarships: C. W. Scott (Dunstable Grammar School), H. J. Newland (Broad Oak School, Northwood), and E. Geffen (University College School).

MARLBOROUGH.—Senior Scholarships: G. F. Squire and H. M. Batson, Middle Fifth; A. J. Hopkinson, Upper Fifth (Hon.); K. K. B. Hall, Lower Fifth; H. F. A. Turner, Lower Fifth (Berens Scholar); and L. H. Sanger Davies, Middle Fifth (Mathematics). Junior Scholarships: A. N. G. Peters, House Scholar (Mr. Daniel, Filey); G. R. S. Wilson (Mr. Branfoot, Ditchling); S. C. Woodroffe, Remove; C. W. Disbrowe, Shell (late from Mr. Grenfell, Parkgate); M. H. Goodall, Lower Fifth (late from Messrs. Wynne and Jenner, Limpsfield), H. M. Yeatman (Mr. Radcliffe, East Grinstead); and M. P. Grubb (Mr. Phillips, Lowestoft). Hon. Mentioned: J. W. Mallinson (Dulwich College Preparatory School). Modern School, Senior: D. J. St. C. Mullaby, Engineering Class. Authors' Scholarship: P. B. Stoodley, Upper Fifth. Modern School, Junior: D. H. M. Tucker (Cathedral School, Llandaff) and D. A. Homan, Modern Shell, equal.

OXFORD: LADY MARGARET HALL.—Gilchrist Fellowship: Miss Fede Mackenzie (First Class in Final Honour School of Natural Science).

OXFORD: SOMERVILLE COLLEGE.—Research Fellowship: Miss Barbara Freire-Marreco, formerly student of Lady Margaret Hall.

OXFORD UNIVERSITY.—Rebecca Flower Squire Scholarships for Honour Candidates for Ordination: C. B. Reynolds, Ireland Exhibitioner, Oriel, and B. de S. Scott, Keble.

The Goldsmiths' Company has awarded Senior Studentships for the encouragement of research to Bertram Lambert, M.A., Merton, and C. S. Gibson, B.A., Corpus. The Goldsmiths' Company's Exhibitions, 1909, have been awarded to L. Davies, Queen's; S. S. Horsley, Merton; E. C. Hyde, Jesus; and G. L. Marriott, Exeter (Classics and Divinity); J. Morgan, Jesus; and I. T. Pritchard, New (Mathematics and Divinity).

The Fishmongers' Company have appointed Mr. William Burridge, B.A., Christ Church, to the Mark Quested Exhibition for three years.

The Leathersellers' Company have elected George Guest Leve, Merton College, to Mr. George Humble's Exhibition; and Harold Sidney Arrowsmith, Wadham College, to Mr. Robert Rogers's Exhibition.

The following have been adjudged by the examiners in the Theory, History, and Practice of Education to be worthy of distinction:—George E. Fawcus, B.A., New College; David C. Somervell, B.A., Magdalen; and Ethel G. Romanes, Lady Margaret Hall. Satisfied the examiners: Meredith Atkinson, B.A., Keble; Guy W. Morris, B.A., St. John's; Olive C. Coldwell, Somerville College; Mabel A. S. Elliott, B.A., Alexandra College, Dublin; Eleanor M. Plumer, King's College, London; Lavinia D. Smith, B.A., Wellesley College, Mass., U.S.A.; Ada M. Stopher, B.A., London; and Gertrude M. Thatcher, Society of Oxford Home Students.

Brasenose. — Colquitt Exhibition: Cyril H. A. Porter, St. Edmund's School, Canterbury. Natural Science Scholarship: Sydney W. F. Underhill, Winchester College.

Christ Church.—History Scholarship: H. L. Maddock, King Edward's School, Birmingham.

Magdalen.—Academical Clerkship (bass voice): Leslie Winterbottom, Exeter Cathedral School.

St. John's.—Dean Mansel Exhibition (Divinity and Hebrew): Edward J. Lee, non-collegiate.

Worcester.—Scholarships: J. P. Higgs, St. Edward's School, Oxford (Classics), and J. C. Masterman, Royal Naval College, Dartmouth, and private tuition (Modern History). Exhibitions: E. B. Cobbold, Ipswich School (Classics); C. A. S. Mathias, Repton School (Modern History): G. F. Timpson, Mill Hill School (German); F. R. H. Englefield, Mill Hill School (German); G. C. Dunlop Hill, Dean Close School, Cheltenham (Classics); E. B. Nelson, King's School, Canterbury (Classics); and R. T. Cole, St. Paul's School (Classics).

RADLEY. — Entrance Scholarships (in alphabetical order): Adams (Messrs. Knowles and Dauglish, Cothill), Banks-Williams (Mr. Nunns, Newton Abbot), Coller (Mr. Tindale, Hurst Court), Hoyle (late of Mr. Parry, Stoke House), Nugee (Mr. Buckland, Laleham), Smith (Mr. Palmer, St. Leonards). Exhibitions: Brown (Mr. Lynam, Oxford), Donaldson (Dr. Williams, Summerfields), Lane Joynt (Mr. Lushington, Elstree), S. Hill (Messrs. Richardson and Ridgeway, Broadstairs).

ST. ANDREWS UNIVERSITY. — Science Research Scholarship (Royal Commissioners of Exhibition of 1851), £150 a year for two years: Thomas Blackadder, M.A., B.Sc. The Commissioners have, by special resolution, renewed for a third year the Science Research Scholarship at present held by John Weir, M.A., B.Sc. In both cases, the subject is Chemistry.

STONYHURST.—Open Scholarships, tenable for two years: "Arundell," E. Bamford (from Wimbledon College); "Senior," C. Taunton; "Dobson," E. O'Duffy; "Junior," W. Waddington.

TONBRIDGE. — Entrance Scholarships:—New Judd Scholarships:

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H. A. J. Parsons (Mr. H. T. Storrs, Shirley House, Shirley House, Old Charlton), K. H. Moore (Mr. J. W. E. Pearce, Merton Court, Sidcup), W. R. Cobb (the Rev. H. C. V. Snowden, St. Peter's, Thanet), J. D. Greenway (the Rev. S. I. W. Shilcock, St. Winifred's, Kenley, Surrey), and S. Farquharson (Mr. W. R. Mills, Highfield, Liphook). Judd Scholarship: M. A. Read (Tonbridge School). Foundation Scholarships: A. W. K. Brackett (Tonbridge School), S. E. Booth (Mr. G. H. Philbrick, Clare House, Beckenham), E. H. F. Morris and C. M. Simpson (Tonbridge School), C. J. O. Daubeny (Mr. C. W. Trask, St. Christopher's, Bath), and C. G. Lachlan (Mr. A. S. Tabor, Cheam School, Surrey).

WESTMINSTER.—Entrance Scholarships:—Resident King's Scholarships: S. L. Holmes, from Mr. Pearce's, Ealing; R. E. D. Cargill, from Westminster School; K. T. D. Wilcox, from Westminster School; T. R. Dawson, from Mr. Mallam's, Sydenham; C. A. Crow, from Mr. Grégoire's, Bath; A. F. Waterson, from Mr. Murray's, Walmer; M. A. Phillimore, from Mr. Humphry's, Southborough; R. R. Sedgwick, from Westminster School; G. A. N. Dickenson, from Westminster School; W. H. V. Nelson, from Mr. Harris's, West Worthing; and Praelectus: R. V. G. Tasker, from Mr. Waterfield's, Eastbourne. Non-Residential Scholarships: A. C. V. Miles, from Westminster School; H. A. Carless, from Westminster School. Exhibitions of £30: A. G. Pite, from Messrs. Chater and Hoffgaard, York Place; A. S. Macpherson, from Mr. Trollope's, St. Albans. Exhibitions of £20: L. C. Gates, from Messrs. Haskoll and Edgington, West Folkestone; D. H. Kitchin, from Thornbury Grammar School.

THE TREASURES OF HERCULANEUM.

PROF. WALDSTEIN, of Cambridge, speaking at a conversazione held in connexion with the recent Conference of the Classical Association of Ireland in Dublin, insisted that the highest goal of education was culture—the love and pursuit of things of the mind for their own sake. The development of science in the past century (he said) had been wonderful, but the nineteenth century would be known for a proportional and similar advance in the historical sciences. It was only in our time that the past had become a real possession, the possession of their mentality, and the classical world was of all the greatest possession. No special study had contributed more to the knowledge of the ancient classical world from one point of view that was not previously known so thoroughly than the department of archæology, the study of ancient monuments, and of the great art of the past. Excavations had opened up to us new splendours, it had given back two thousand years of which we had known practically nothing. No site, he proceeded, could so fully realize that enlarged conception of the classical world as could the site of Herculaneum. The treasures that had already been found, and, still more, those that they had a right to expect to find there, would prove those excavations to be fuller of the glories that ancient Greece had to give us than any other excavations. The great catastrophe of the year 79 A.D., so disastrous to the inhabitants, had been one of the greatest benefits to modern study; and so wonderfully was everything preserved that the buried towns of Campania promised greater yields to the archæologist than all the great sites of Greece. The yield of bronzes alone was greater than all the yields of Athens, Delphi, and Olympia put together; and, when they came to manuscripts, seventeen hundred more or less complete manuscripts had been found in one villa alone in Herculaneum—a site which, he mentioned, was far more important than that of Pompeii, for it was better preserved, and the greater suddenness of the catastrophe there had meant that the inhabitants left everything untouched, whereas the inhabitants of Pompeii had had time to carry away many of their treasures, and in some cases even returned for others. Herculaneum was a cultured place—a summer resort for the wealthy Romans—whereas Pompeii was a small commercial provincial town. Continuing, the Professor described the great international movement for carrying out the excavations (which would be costly, because there existed a modern town built over the site), and said that one day, when all was ready, the vulgar Chauvinism of the time stepped in and stopped it all. The scheme, however, was not dead yet. Having shown and explained a number of slides depicting the principal discoveries, Prof. Waldstein said he had only given them some idea of the wealth they might hope for one day when Herculaneum was excavated. They would agree that there was hope for much more, and they ought all to unite in their efforts to bring to light the treasures which were the heritage of civilized life in the West.

COLLEGE OF PRECEPTORS.

HALF-YEARLY GENERAL MEETING.

THE ordinary half-yearly General Meeting of the members of the Corporation was held at the College on Saturday, July 17.

The Secretary having read the advertisement convening the meeting, Prof. ADAMS was appointed Chairman.

The Report of the Council was laid before the meeting and was taken as read, a copy having previously been sent to every member. It was as follows:—

REPORT OF THE COUNCIL.

The Council beg to lay before the members of the College the following Report of their proceedings during the past half-year:—

1. During the past half-year a Course of Twelve Lectures on "The Psychological Bases of Teaching and Education" has been delivered by Prof. J. Adams, M.A., B.Sc., F.C.P. A Course of Twelve Lectures on "Practical Problems of the Classroom" will be given by Prof. Adams in the autumn.

2. The Christmas Examination of Teachers for the College Diplomas was held in the first week in January, and was attended by 527 candidates—355 men and 172 women. During the past half-year the Diploma of Fellow has been conferred on one candidate, that of Licentiate on 34, and that of Associate on 172, who had satisfied the prescribed conditions.

3. The number of entries for the Midsummer Certificate and Lower Forms Examinations is 4,760. The Professional Preliminary Examination was held in the first week in March, and was attended by 329 candidates.

4. During the past half-year the Council have conducted the Inspection and Examination of six schools by Visiting Examiners.

5. The Council have again conducted the Examinations of the Newfoundland Council of Higher Education which were held at 108 Centres in the last week in June. There has been a substantial increase in the number of entries for these Examinations.

6. At the Members' Meetings held during the past half-year the following Lectures have been given:—"On the Government of Children, with special reference to Rewards and Punishments," by Prof. J. J. Findlay, M.A.; "The Educational Value of Play," by Mr. J. L. Paton, M.A.; "The Dangers of Illustration in Class Teaching," by Prof. J. Adams, M.A., B.Sc., F.C.P. At the April Meeting there was a Discussion on "The Relations between Head Masters and Assistant Masters," which was opened by Mr. W. J. Addis, M.A. Reports of the Lectures and Discussions have been published in *The Educational Times*.

7. During the past half-year eighteen new members have been elected; one name has been removed from the list, and notice has been received of the withdrawal of five. The Council regret to have to report the death of following members:—Mr. W. B. Anthony, A.C.P., Mr. H. C. Bowen, Mr. F. Dermont, Mr. W. H. Harris, Mr. C. E. T. Laker, Rev. J. H. Newnum.

8. In accordance with the request of the last General Meeting, the Council have been engaged in considering whether by any methods the work and usefulness of the College may be increased. The Council, however, have not yet been able to complete their consideration of important questions which have been raised in the course of the inquiry, and they desire, therefore, to postpone their report on the whole matter until the next ordinary General Meeting of the members of the College.

9. The Council are glad to be able to report that the Federal Council are arranging for a Conference of Associations of Teachers, to be held in the autumn, at which it is hoped that agreement may be secured among all sections of teachers as to the constitution of a Registration Council, and that substantial progress may thus be made towards the establishment of a new Register.

In reference to paragraph 9, Mr. EASTERBROOK explained that the Federal Council, consisting of representatives of several associations of teachers, had decided that it was advisable to hold in the autumn a general Conference of representatives of educational associations, which should be presided over by some leading public man, for the purpose of arriving at an agreement, as as far as possible, among all sections of teachers as to the constitution of a Registration Council. He wished to correct a mistaken impression that appeared to have arisen, that the Federal Council had in some way been instrumental in bringing about the collapse of Dr. Gow's Committee. This was certainly not the case, and it was only after Dr. Gow's Committee had decided not to proceed any further, that the Federal Council had determined to take up the work and endeavour to bring it to a successful issue. If it were simply a question of arranging for the establishment of a Register of secondary teachers, there

would probably be no great difficulty in coming to an agreement, but the Act of Parliament required a general register of all classes of teachers, and this greatly complicated the problem.

In reply to questions put by Mr. SOUTHEE and Mr. STORR, Mr. EASTERBROOK said that all bodies which could be regarded as educational associations, whether primary, secondary, or technical, would be invited to send representatives to the proposed Conference.

The report of the Council was adopted.

The DEAN then presented his report, which had been printed and circulated among the members attending the meeting. It was as follows:—

THE DEAN'S REPORT.

In addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Midsummer Examination of candidates for Certificates took place on the 29th June to the 3rd July at 125 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Abingdon, Athlone, Balham, Banagher, Bath, Belfast, Birmingham, Birr, Blackpool, Boston Spa, Bridgnorth, Brighton, Bristol, Bruff, Budleigh Salterton, Bury St. Edmunds, Buttevant, Cahir, Cardiff, Carlisle, Carmarthen, Carnarvon, Chapelizod, Charleville, Cheltenham, Chichester, Clapham, Coleford, Congleton, Cork, Croydon, Devonport, Dublin, Dumfries, Ealing, East Grinstead, Eccles, Edinburgh, Exeter, Eye (Suffolk), Falmouth, Felixstowe, Fethard, Folkestone, Forest Hill, Goudhurst, Grimsargh, Grove Ferry, Hawkhurst, Herne Bay, Highgate, Horsmonden, Huddersfield, Hunstanton, Inverurie, Kanturk, Kilfinane, Leeds, Lerwick, Liverpool, London, Lostock Gralam, Maidstone, Manchester, Mansfield, Margate, Melton Mowbray, Merthyr Tydfil, Middlesbrough, Midleton, Mountmellick, Newcastle-on-Tyne, Newquay, Nottingham, Orrell, Penarth, Pencader, Pentre, Plymouth, Porth, Portsmouth, Richmond (Surrey), Rochester, Rugeley, Ruthin, St. Leonards-on-Sea, Scorton, Seaford, Sheffield, Skegness, Southampton, Southport, Stoke-on-Trent, Streatham Hill, Sunderland, Taplow, Taunton, Waterford, Wellington (Salop), Westcliff-on-Sea, West Hartlepool, Weston-super-Mare, Weybridge, Wigton, York. The Examination was also held at Gibraltar, Constantinople, Gwelo and Bulawayo (Rhodesia), Colombo (Ceylon), Nassau (Bahamas), and Georgetown (British Guiana).

The total number of candidates examined (not including 149 examined at Colonial Centres) was 3365—2317 boys and 1048 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined during the year ending Midsummer, 1909 (not including those who attended the supplementary examinations in March and September), has been 8198.

The following table shows the proportion of the candidates at the recent Midsummer Examination who passed in the class for which they were entered:—

	Examined.	Passed.	Percentage.
First Class [or Senior] ...	387	185	48
Second Class [or Junior].	1333	715	54
Third Class	1250	892	71

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (395 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 101 examined at Colonial Centres) was 1011—479 boys and 532 girls. Of these 846 passed, or 84 per cent.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held on the 2nd to 4th of March, in London and at nine Provincial Centres, viz., Birmingham, Bristol, Cardiff, Edinburgh, Inverness, Leeds, Liverpool, Manchester, and Newcastle-on-Tyne, 329 candidates presented themselves.

On the results of the Christmas Examination of Teachers, 1 candidate obtained the Diploma of Fellow, 34 that of Licentiate, and 141 that of Associate.

Practical Examinations to test Ability to Teach were held in February and May. At these Examinations 9 candidates presented themselves, and 8 obtained Certificates.

Dr. DICKINSON remarked on the unusual difficulty of the Second Class Arithmetic Paper, consisting as it did almost entirely of questions in problem form. He contended that the absence of plain straightforward questions, especially in an obligatory paper, was calculated to discourage young candidates at the outset and to place them at a disadvantage.

The DEAN said his attention had already been directed to the matter referred to by Dr. Dickinson, and that the character of the paper had been taken into account in marking the answers.

The report was adopted.

A vote of thanks to the Chairman concluded the proceedings.

ADJOURNED MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

AN adjourned meeting of the Council was held at the College, Bloomsbury Square, on July 17. Present: Prof. Adams (Vice-President) in the chair, Dr. Armitage Smith, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. Charles, Mr. Eagles, Mr. Easterbrook, Mr. Eve, Miss Jebb, Mr. Kelland, Dr. Maples, Mr. Milne, Dr. Moody, Mr. Starbuck, and Prof. Foster Watson.

The Diploma of Fellow was granted to Mr. B. L. K. Henderson, who had satisfied the prescribed conditions.

The following books had been presented to the Library since the last meeting of the Council:—

By the GENERAL MEDICAL COUNCIL.—Minutes of the General Medical Council January-June, 1909.

By E. ARNOLD.—Jones and Blomfield's Elementary Mechanics of Solids and Fluids.

By G. BELL & SONS.—Ashton's Senior English Grammar; Chaffey's Bell's First German Reader.

By A. & C. BLACK.—Varley's The Story of Hampshire.

By BLACKIE & SON.—Blackie's English Authors for School Reading (2 vols.); Blackie's English Texts (3 vols.); Blackie's Masters of English Literature (6 vols.); Barter's Book of Sonnets; Gould's Souvestre's Le Serf; Major's Moral Instruction (Advanced Stage).

By the CAMBRIDGE UNIVERSITY PRESS.—Cambridge Higher Local Examination Papers, June, 1909; Pearson's Euripides' Phoenissae.

By W. B. CLIVE.—Matriculation Directory, No. 52, June, 1909.

By MACMILLAN & CO.—Fowler's Tennyson's English Idylls and other Poems; Marchant's Thucydides, Book III.

By METHUEN & CO.—Williamson's Gospel according to St. Luke; and Junior English Grammar.

By the OXFORD UNIVERSITY PRESS.—Elford and Heaton's Practical School Gardening; Herbertson's Elementary Geography, Vols. I. and III.; Mulliner's Tennyson's English Idylls and other Poems, and Tennyson's Shorter Poems and Lyrics.

By ALSTON RIVERS.—De Tizac's Modern French Reader; Joerg and Joerg's Modern German Reader.

By RIVINGTONS.—Borchardt's Practical Arithmetic; Florian's First Book of German Oral Teaching; Lechner's Easy Readings in German; Savory's Muellenbach's Johannissegen; Williams's First Latin Book.

Calendar of Edinburgh University.

Calendar of the University of the Cape of Good Hope.

THE Rev. J. A. L. Airey, M.A., Rector of St. Helen's, Bishopsgate, has died at an advanced age. He was Second Wrangler in 1846, and for some time Chief Mathematical Master and Master of the Modern Side at Merchant Taylors' School.

DULWICH COLLEGE Old Boys will learn with regret of the death of the Rev. Canon Carver, who was Head Master there for twenty-five years. He was born in 1826. After leaving Trinity College, Cambridge, where he had a most distinguished career, he became a master at St. Paul's School. He was appointed to Dulwich College in 1858, and under his control the College was raised to the position of one of the leading public schools in the country. After his retirement, in 1883, he was made an Honorary Canon of Rochester Cathedral. His charm of manner and keen personal interest in his pupils endeared him to all who were brought under his influence.

MR. CYRIL JACKSON, Chairman of the Education Committee, and Mr. Cyril S. Cobb, the Vice-Chairman, write from the L.C.C. Education Office, Victoria Embankment, to make an appeal on behalf of the three open-air schools carried on in London—at Birley House, Lordship Lane; Montpelier House, Kentish Town; and Shrewsbury House, Woolwich. The medical officers of the County Council have certified in respect of each child that he or she cannot obtain proper benefit from the instruction given in the ordinary school. Left there, they are a burden to themselves and to their fellow scholars, and are the despair of the teachers. It has been abundantly proved that these children can be restored to physical and mental strength by the special treatment given in the open-air school. These schools have received the unanimous approval of education and medical experts. The schools must at once be closed unless the money is forthcoming to meet the charges in respect of food and small expenditure for boots, where these are essential for the preservation of health. The restoration to health and the educational progress of these children are at stake. £1,000 is urgently wanted to meet outstanding liabilities and carry the schools on to the end of October.

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SCIENCE TEACHING IN PUBLIC SCHOOLS.

A REPORT on "Science Teaching in Public Schools represented on the Association of Public Schools Science Masters" has been issued by the Board of Education as an educational pamphlet (17). It is based on material collected from various schools, or obtained in conversation or correspondence with various science masters, and was prepared by Mr. O. H. Latter, of Charterhouse, who has acted as general editor. Mr. Latter states that a circular of questions was sent to 71 schools and colleges, that useful replies were received from 46, while 24 made no response, and one definitely refused to supply information.

After a review of the early development of science teaching in certain schools, the report states (says the *Times*) that, of the external influences which helped science to establish its position among the subjects of study, the most potent factor was the ever-increasing importance attached to science subjects in examinations conducted by the Universities. Much also was due to committees of inquiry appointed at various times by the British Association, and notably to the committee which recommended at the Bath meeting in 1888 "that chemistry should be taught in schools, first and mainly on account of the mental training it affords, and secondly for the sake of its applications and its direct bearing on the facts of everyday life." In the twenty-one years that have elapsed the science teaching in our public schools has been revolutionized. During recent years a great effect has been produced by the inclusion of science on terms more favourable than previously in the examinations necessary for admission to the Army. This reform of the Army examinations has led to a great increase in the number of boys learning science in the Army classes and military sides of the schools, thus throwing a strain on both science staff and accommodation such as to compel attention. The outcome of this has been the augmentation of the science staff and the erection of new laboratories and science classrooms by many schools.

The total number of boys in the 46 schools which replied to the circular is approximately 14,714, and of these about 9,013, or just over 61 per cent., are receiving more or less training and instruction in science as part of the regular school course. This is the percentage of boys who are actually learning science at the moment, but probably of those who pass through our public schools at the present time about 90 per cent. are compelled to take a longer or shorter course of science. Of the 1,011 masters employed in the schools concerned, 112 are engaged virtually in teaching science only. In 26 of the schools there is complete division into classical and modern sides, often accompanied by subdivision into Army class, mathematical, engineering, and science sides. Ten of the schools are chiefly classical, but have modern sides or their equivalent in the upper forms, while ten have no definite line of cleavage. In these last, however, the proportion of boys actually learning science at a given time is over 68 per cent. of the total number. "It is thus evident that differentiation into classical and modern sides is by no means essential; indeed, it is probable that in the absence of such differentiation it is possible to employ science as a medium of general education more easily and efficiently than when the utilitarian demands and semi-technical training of a special modern side make themselves felt." It is satisfactory to find, says the report, that in very few schools is there no science taught on the classical side, and that in only a few is it made an alternative—usually for Greek or German.

A very satisfactory and encouraging feature brought to light by the inquiry is the recognition of the claims and importance of science by the governing bodies and other authorities responsible for the administration of public school finances. Laboratories and classrooms specially designed and equipped for science teaching are the rule. At least one chemical laboratory is found in every one of the 46 schools, and at least one separate physical laboratory in 45. Direct experimental work performed by the boys themselves is now a universal practice, at any rate when once the systematic course is reached, and the number of boys doing no practical work in the laboratories is very small. Specialization in science is seldom allowed until a boy has reached the upper half of the school. The motive which leads to the forsaking of other subjects is generally to obtain the preliminary training required for some scientific profession, such as engineering or medicine, and frequently to compete for a science scholarship at a University,

MORE IMPERIAL AID FOR EDUCATION.

MR. MARSHALL JACKMAN, Vice-President of the National Union of Teachers, speaking recently at Bath, the Mayor of Bath in the chair, said educationists consider that too little is spent on education in this country, while rate-payers think that too much is spent on education out of the rates. Both statements he contended were true. The Royal Commission on Local Taxation were unanimously of opinion that education was a national service, and in a high degree. Some people desired that education should be entirely a national charge. If education were entirely controlled and financed by the Board of Education, it would become bureaucratic, stereotyped, and lacking in initiative. The emulation created by Local Authorities under the old School Board system or under the present system of municipalization of education, and the introduction into the administration of level-headed business men instead of the expert and leisured doctrinaire, were the causes of the great advance made during the last forty years. Few educationists would like to see the local control of education entirely eliminated; and with local control there must be local charges. The vexed question that required settling was the question of the proportion of these local charges. According to the latest figures available, elementary education cost £21,500,000, of which £11,750,000 were supplied by grants from the Exchequer. The remainder came from local rates, fees, endowments, &c. Large as these grants from the Exchequer might appear, they were quite inadequate and were very badly allocated. Although Imperial grants for elementary education had more than trebled themselves during the last twenty years, the grants to-day afforded less effective relief to the rate-payer than they did twenty years ago. The additional grants had only replaced decreases of income from other sources, or had been swallowed up by the cost of added responsibilities imposed on localities by Parliament and an increased school population. The annual Subject Grants per head remained much the same to-day as they were twenty years ago. The total amount of these annual grants in 1886 was £2,988,228, and in 1907 they had increased to £5,670,773, but the average attendance of the children had increased from 3,438,425 to 5,303,229. The Fee Grant gave no effective relief to the rate-payer, but relieved the parents from the payment of fees; in fact, the total amount received to-day by Local Authorities in fees and fee grants was less per head than the fees were in 1895. During the last seven or eight years additional assistance had been given from the Exchequer in aid of voluntary schools and of necessitous School Board districts. Under the Bill of 1902 this Aid Grant was paid over to the new Local Education Authorities and very largely increased. The Aid Grant in 1901 amounted to £825,000; in 1906 it had increased £2,428,674, but this exceedingly large increase in aid from the Exchequer did not assist the rate-payers at all. On the contrary, the responsibility of taking over the voluntary schools which accompanied the increase in the Aid Grant caused an enormous increase in the rates. Between 1901 and 1906 the rates had increased by £3,150,000. During the same period the increase in the cost of staffing of the schools amounted to £4,500,000. Some of this increase was quite a legitimate burden to throw on certain localities which had been escaping their obligations. While agreeing with the placing of the voluntary schools on the rates, Mr. Jackman contended that this enormous burden should not have been placed on the localities without much more central aid. The present Government had no right to shelter themselves behind the faults of the previous Government. They probably realized this, for they intended to accompany their Bill of 1906 with an extra Exchequer grant. Moreover, the Government had already pledged themselves to assist Local Authorities in the new charge recently thrown on the rates in connexion with medical inspection. Mr. McKenna, in the House of Commons, and Lord Crewe, in the House of Lords, when the Administrative Education Bill was going through the House, definitely promised a grant to meet the extra charge that medical inspection would throw on the localities. The present Budget gave indication of large surpluses in the future. The public should insist that some of this money should go in relief of local education burdens. But not only was more money required, but a distinct alteration in the method of allocation of grants. The central aid should (1) relieve the localities substantially, (2) reduce inequalities, and (3) encourage improvement.

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CURRENT EVENTS.

Fixtures.

A SUMMER School of the Psychology of the Child and of Methods of Learning in Junior Classes and Kindergartens will be held at the Home School, Bishopswood Road, Highgate, N., August 2–14. Courses similar to those held in previous years at the Froebel Educational Institute.

* * *

THE Summer School of University Extension Students at Oxford runs from July 30 to August 23.

* * *

THE Holiday Course for Foreigners arranged by the London University Board for the Extension of University Teaching, and directed by Prof. Rippmann, will run on to August 13.

Honours.

THE University of Cambridge has conferred the honorary degree of LL.D. on Dr. Hermann Diels, Professor of Classical Philology in the University of Berlin.

* * *

IN connexion with the Darwin centenary celebrations Dr. Francis Darwin has been elected a foreign member of La Société Hollandaise des Sciences, Haarlem, and a member of the American Philosophical Society; and Prof. Sir George Darwin and Dr. Francis Darwin have been elected corresponding members of the Senkerbergische Naturforschende Gesellschaft, Frankfort, hon. members of the Societas Caesarea Naturae Curiosorum Mosquensis (commonly known as the Société Impériale des Naturalistes de Moscou), hon. members of the University of Moscow, and members of the Kaiserliche Leopoldinisch-Carolinische Deutsche Akademie, Halle. The last-named academy was the first of foreign academies to honour Charles Darwin by making him a member in the year 1857.

* * *

THE University of Durham has conferred the honorary degree of D.C.L. on the Archbishop of York, Sir Hugh Bell, Professors Turner and Firth (Oxford), and the Rev. J. F. Hodgson, Vicar of Witton-le-Wear, one of the oldest graduates of the University; also the honorary degree of M.A. on Mr. William John Hardy, Major W. F. Hessey, and Mr. F. H. Pruen (Secretary of Armstrong College).

* * *

THE University of Dublin has conferred the following honorary degrees:—

D.Sc.: Ernest William Hobson, Cambridge.
D.Litt.: The Rev. James Cooper, D.D., Professor of Ecclesiastical History, Glasgow; Arthur Surridge Hunt, D.Litt. Oxon.

* * *

THE University of Manchester has conferred the following honorary degrees:—

D.Litt.: Mrs. Sidney Webb.
M.A.: Charles E. Bellyse Russell, of the Heyrod Street Lads' Club.
M.Com.: Richard Curtis Barnes.

* * *

THE University of Birmingham has conferred official degrees on three new members of the staff: M.Sc., Prof.

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J. Cadman (Mining); M.A., Prof. Granville Bantock (Music), and Prof. E. de Selincourt (English).

* * *

THE University of Leeds has conferred the honorary degree of LL.D. on the Archbishop of York, and on Col. T. W. Harding (President of the Health Congress); and the honorary degree of D.Sc. on Sir J. Crichton-Browne and Major Ronald Ross.

* * *

THE University of Edinburgh has conferred the honorary degree of LL.D. upon the Right Hon. George Wyndham, M.P., Lord Rector of the University, and upon Mme. Curie.

* * *

THE honour of knighthood has been conferred on Mr. James Henry Yoxall, M.A. Oxon. and Cantab., M.P., General Secretary of the N.U.T.; and on Mr. Samuel Dill, M.A., D.Litt., Professor of Greek, Queen's College, Belfast, formerly High Master of Manchester Grammar School.

* * *

MR. HENNIKER HEATON, M.P., Mr. E. H. Stone, Dr. G. E. Shuttleworth, Prof. W. J. R. Simpson, M.D., Prof. E. Wilson, the Rev. Prof. A. Nairne, and Mr. C. D. Webb have been elected Fellows of King's College, London.

* * *

MR. JOHN WILFRED JENKINSON, M.A., B.Sc., formerly Classical Scholar of the College, has been elected to an ordinary Fellowship at Exeter College, Oxford, for distinction in scientific research (Biology).

* * *

A PORTRAIT of the late Marquis of Ripon, Chancellor of the University of Leeds, by Sir H. von Herkomer, has been presented to the University on behalf of members of the Court and staff and other friends.

* * *

A PORTRAIT of Dr. Stroud, who recently resigned the Cavendish Chair of Physics in Leeds University, has been presented to the University by friends and past students. The artist is Mr. W. Llewellyn.

Endowments and Benefactions.

LORD STRATHCONA has given £100,000 to McGill University, of which he is Chancellor—£90,000 to complete the Medical Faculty Buildings, £10,000 to the fund for augmentation of the salaries of professors.

* * *

ALL SOULS COLLEGE, Oxford, will give £500 to the Bodleian (catalogue); £200 a year for three years towards the fund for the Lecturer on Economic History; £200 a year for three years for the teacher of Political, Constitutional, or Economic History or Theory to classes of working men under the Joint Committee for Working Class Education; £200 a year for three years for a Lecturer in Private International Law; and £300 for three successive courses of lectures on Foreign History.

* * *

MAGDALEN COLLEGE, Oxford, will give £250 to the Bodleian; £250 to the University Museum; £50 to Dr. Macray's pension; £100 to increase the collections of the Antiquarium and Fine Art Galleries; £150 to augment the stipend of the Lincoln and Merton Professor of Classical Archæology and Art; £100 to augment the stipend of the Sherardian Professor of Botany; £100 to augment the stipend of the Professor of Pathology; and £50 towards a stipend for a Professor of French Literature. The augmentations of stipends are to continue from year to year so long as they may be needed.

* * *

MESSRS. J. HENRY SCHRÖDER & CO. have given £20,000 for the permanent endowment of a Schröder Professorship of German at Cambridge.

THE Drapers' Company have renewed their grant of £2,000 for the purposes of the work of the Department of Applied Mathematics at University College, London; and the Mercers' Company have made a grant of £500 to the Physiological Department of the same College.

* * *

THE Drapers' Company have raised their gift towards the Library of Cardiff University College from £10,000 to £16,000.

* * *

MR. ALEXANDER ELDER has increased his endowment of the Liverpool Chair of Naval Architecture from £12,500 to £20,000.

* * *

MR. DAVID DAVIES, M.P., Plasdinam, has offered to provide a dining-hall (for 50 professors and 300 students), together with common rooms for the staff and the students, &c., at Aberystwyth University College, provided the College authorities build a hostel for one-third of the men students. The cost is estimated at £8,000.

* * *

DR. JOHN HALL, a Graduate of Glasgow University, has left some £35,000, subject to a life interest, to the University for the foundation of tutorial fellowships in surgery, medicine, and midwifery.

* * *

MR. CHARLES BRUCE, Edinburgh, has intimated his intention of giving £5,000 to the University of Edinburgh to found a Lectureship in Banking.

* * *

MR. JOHN CORY has promised £2,000 to the building fund of Cardiff University College on condition that the whole remaining debt of £35,000 be cleared off by October 14, when the new buildings will be opened.

* * *

THE Leys School, Cambridge, has received from two anonymous donors £4,000, to establish two scholarships of £60 a year, tenable at Cambridge University.

* * *

THE heirs of the late Herr Heinrich Lanz, head of the Mannheim Engineering firm, have given 1,000,000 marks for the establishment of an Academy of Sciences at Heidelberg, which will stand in the same relation to the University as the similar institutions in Leipzig and Göttingen stand to the Universities in those cities.

Scholarships and Prizes.

LINCOLN COLLEGE, OXFORD, offers a Scholarship in Modern History (£80). Examination, December 7. An Exhibition (about £30) may be awarded in the same subject. No limitation of age.

Appointments and Vacancies.

THE Belfast University Commissioners have made the following appointments in the Queen's University, Belfast:—

Professorships.—Modern History: Mr. F. M. Powicke, M.A. Oxon. and Manc., Senior Assistant Lecturer in History, Manchester University. Economics: Mr. Thomas Jones, M.A. Glas., formerly Lecturer in Social Economics, Glasgow University, and for the last three years Special Investigator for the Poor Law Commission. Botany: Mr. D. T. Gwynne-Vaughan, M.A. Cantab., formerly Lecturer in Botany, Glasgow University and Birkbeck College, London. French Language and Romance Philology: Mr. D. L. Savory, M.A. Oxon., French and German Lecturer, Goldsmiths' College, University of London. Jurisprudence and Roman Law: Mr. J. A. Strahan, M.A., LL.B., Reader to the Inns of Court.

Lectureships.—Archæology and Ancient History: Mr. K. T. Frost, M.A., B.Litt., Oxon., of the Bodleian Library, formerly Lecturer in Ancient and Medieval History, Department of Public Instruction, Egypt, and an Excavator in Greece, Asia Minor, and Egypt. English Language: Mr. Algernon O. Belfour, M.A. Oxon., formerly Assistant

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to the Professor of Anglo-Saxon, Oxford. Celtic Languages and Literature: Rev. F. W. O'Connell, M.A., B.D., T.C.D., Rector of Achonry and Advisory Examiner in Irish to the Intermediate Education Board. Moral Philosophy and History of Philosophy: Mr. H. L. Stewart, M.A., D.Ph., R.U.I. Scholastic Philosophy: Rev. Denis O'Keeffe, M.A., R.U.I. Organic Chemistry: Mr. A. W. Stewart, D.Sc. Glas., Lecturer in Stereochemistry and Assistant to Prof. Sir W. Ramsay, University College, London. Physics: Mr. Robert Jack, M.A., D.Sc., Ph.D., Glasgow and Göttingen. Bio-Chemistry: Mr. J. A. Milroy, M.A., M.D. Edin., Demonstrator of Physiology, Queen's College, Belfast. Geology and Geography: Mr. A. R. Dwerryhouse, M.Sc., D.Sc., F.G.S., Asisstant Lecturer in Geology, Leeds University. Hygiene: Mr. W. J. Wilson, B.A., M D., R.U.I., Riddell Demonstrator of Pathology and Bacteriology, and Joint Lecturer in Sanitary Science, Queen's College, Belfast.

* * *

THE Dublin Commissioners invite applications for thirty-five Professorships, sixteen Lectureships, the Registrarship, the Secretaryship and Bursarship, and the Librarianship, in University College, Dublin; for five Professorships and six Lectureships in University College, Cork; and for two Professorships and one Lectureship in University College, Galway. Stipends range from £750 to £50. Apply to Mr. Robert Donovan, Secretary to the Commissioners, Royal University Buildings, Dublin, by August 31.

* * *

APPLICATIONS for the Chichele Professorship of Military History in Oxford University must be lodged with the Registrar of the University by August 14.

* * *

DR. HERMAN OELSNER, M.A. Oxon., Non-Coll., Ph.D. Berl., Taylorian Lecturer in Old French and Romance Philology, and formerly Scholar of Caius College, Cambridge, has been appointed Taylorian Professor of the Romance Languages, Oxford.

Signor Cesare Foligno, D.Litt. Milan, has been appointed to the Taylorian Lectureship in Italian, vacant by the retirement of Signor Coscia.

* * *

THE Mastership of St. Catharine's College, Cambridge, is vacant through the death of the Rev. Dr. Robinson.

* * *

MR. F. G. KENYON, M.A. Oxon., D.Litt. Dunelm., Ph.D. Halle, F.B.A., Honorary Fellow of Magdalen College, Oxford, has been appointed Director of the British Museum, in succession to Sir Edward Maunde Thompson, G.C.B., resigned. Dr. Kenyon has been Assistant-Keeper of MSS. since 1898, and has published numerous texts from papyri, as well as other works.

* * *

MR. M. J. M. HILL, M.A., D.Sc., F.R.S., Professor of Mathematics in University College, has been elected Vice-Chancellor of the University of London for 1909–10.

* * *

PROF. BURY, of Cambridge, has been appointed Creighton Lecturer for 1909–10 in the University of London. He will lecture on "The Constitution of the Later Roman Empire."

* * *

IN Manchester University, Mr. J. T. Young, Principal of the College of Agriculture, Holmes Chapel, has been appointed Lecturer in Agriculture; and Mr. J. Read, Ph.D.Zur., Assistant to the Professor of Chemistry.

* * *

IN the University of Birmingham, Mr. George Stephen West, M.A., D.Sc., A.R.C.S., Lecturer in Botany in the University, has been appointed to the Chair of Botany vacated by Prof. Hillhouse; and M. Henri L. Chatelain, Docteur ès Lettres, to the Chair of French, in succession to Prof. Bévenot.

The Mason Chair of Zoology is vacant by the death of Prof. T. W. Bridge, Sc.D., F.R.S. Applications to be lodged with Mr. George H. Morley, Secretary to the University, by September 18. £600.

MR. JOHN PERCIVAL POSTGATE, M.A., Litt.D., F.B.A., Fellow and Classical Lecturer of Trinity College, Cambridge, Professor of Comparative Philology, University College, London, and Editor of the *Classical Quarterly*, has been appointed Professor of Latin in Liverpool University.

* * *

SIR ISAMBARD OWEN, Principal of Armstrong College, Newcastle-on-Tyne, has accepted the Vice-Chancellorship of Bristol University.

* * *

MR. HAROLD ALBERT WILSON, M.A., D.Sc., F.R.S., Professor of Physics, King's College, London, and lately Fellow of Trinity College, Cambridge, has been appointed Professor of Physics in McGill University. He is succeeded by Dr. C. G. Barkla, Demonstrator and Assistant Lecturer in Physics, Liverpool University.

* * *

THE Joint Matriculation Board of the University of Manchester, Liverpool, Leeds, and Sheffield requires an Organizing Secretary for the Examination and Inspection of Schools. Apply to Mr. R. F. Gwyther, Secretary, by September 15.

* * *

THE University College of North Wales requires a Lecturer in German and Teutonic Philology. £250. Apply to Mr. J. E. Lloyd, M.A., Secretary and Registrar, by September 18.

* * *

IN Edinburgh University, Mr. John Hepburn Millar, B.A., LL.B., Advocate (son of the late Lord Craighill), has been appointed to the Chair of Constitutional Law and Constitutional History; and Mr H. Alexis Thomson, M.D. Edin., to the Chair of Surgery.

* * *

THE Chair of Anatomy in Edinburgh University is vacant by the death of Prof. D. J. Cunningham.

* * *

AT Cardiff University College Mr. J. Hunter Smith, B.Sc., has been appointed Lecturer in Agricultural Chemistry; Mr. Andrew Rutherford, Lecturer in Agricultural Botany; Mr. J. C. Trill, B.Sc., Assistant Lecturer and Demonstrator in Engineering; and Miss Rosa Waugh, Teacher of Drawing to Women Normal Students.

* * *

MR. A. HERMANN THOMAS, M.A., has been appointed a Lecturer in History in Sheffield University.

An Assistant Lecturer and Demonstrator in Botany is required.

* * *

MISS K. BROWN, M.B., B.S., has been appointed Demonstrator in Anatomy in the London School of Medicine for Women.

* * *

MR. P. M. ROXLEY has been appointed Lecturer in Regional Geography in Liverpool University.

* * *

MR. JAMES COLQUHOUN IRVINE, D.Sc., Ph.D. Leip., Lecturer on Organic Chemistry, United College, St. Andrews, has been appointed to the Chair of Chemistry there.

* * *

MR. B. E. R. TURNER, M.A., Balliol College, Oxford, has been appointed Lecturer in Greek in King's College, London.

* * *

IN Edinburgh University, Mr. R. L. Græme Ritchie, M.A. Aberd., has been appointed Junior Lecturer in French, and Mr. Hans F. Eggeling, M.A. Edin. (son of the well known Professor of Sanskrit), Junior Lecturer in German, in the University of Edinburgh.

* * *

THE REV. S. C. GAYLORD, M.A. Oxon., Vice-President of Cuddesdon, has been appointed Vice-President of Bishops' College, Cheshunt.

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Mr. A. Ritchie Scott, B.Sc., formerly Assistant Registrar of the University of the Cape of Good Hope, has been appointed Head Master of the Beaufoy Institute, Lambeth.

* * *

Miss Laura E. Kempson has been appointed Registrar and Director of Women Students, and Miss Blanche S. H. Henry (recently Head of the Domestic Economy department at Manchester High School) Head of the Department of Domestic Science, at the South-Western Polytechnic, Chelsea, in succession to Miss Cora B. Sanders and Miss Florence Wahlers, resigned.

* * *

Mr. T. Cleghorn Baillie, M.A., D.Sc., Head of the Physics and Electrical Engineering Department, Sunderland Technical College, and Assistant Lecturer and Demonstrator in Physics and Electrical Engineering, Bangor University College, has been appointed Principal of the Croydon Polytechnic.

* * *

A Chief Lecturer in Chemistry is required at the Municipal School of Technology. Manchester. The post carries the status of Lecturer in the University. £350. Particulars from the School of Technology, Sackville Street. Apply to Mr. J. H. Reynolds, Dean of the Faculty of Technology, Manchester University, by September 11.

* * *

Mr. C. Gordon Hewitt, M.Sc., Lecturer in Geology, Manchester University, has been appointed Government Entomologist for the Dominion of Canada.

* * *

The Rev. J. R. Rees, M.A., has been appointed Lecturer in Homiletics and Pastoral Theology in the Calvinistic Methodist Church, Aberystwyth.

* * *

Barnstaple School of Art requires a Head Master. £250. Apply to the Secretary, Mr. G. W. F. Brown, the Strand, Barnstaple, by August 6.

* * *

The Rev. H. T. Bowlby, M.A. Oxon., Assistant Master and House Master, Eton College, has been appointed Head Master of Lancing College.

* * *

Mr. R. S. Forbes, B.Sc., Agricultural Lecturer to the Dorset County Education Committee, has been appointed Director of Agriculture for Montgomery and the counties associated with the University College, Aberystwyth.

* * *

Miss A. Whitley, Senior Assistant at Ossett Grammar School, has been appointed Head Mistress of Kirkby Stephen Girls' Secondary School.

* * *

The Rev. A. F. Rutty, M.A. Cantab., is retiring from the Head Mastership of St. John's College, Leatherhead, which he has held since 1883.

* * *

Mr. Clarence J. Forth, M.A. Cantab., B.Sc. Lond., Senior Master, Woolwich Polytechnic Secondary School, has been appointed Head Master of the new Secondary School, Goole.

* * *

Mr. A. J. Spilsbury, M.A., Senior Classical Master, City of London School, has been appointed Head Master of Aske's Haberdashers' School, Hampstead.

* * *

Mr. A. H. Webb, B.A., B.Sc., Head Master of Theobald's Grammar School, Needham Market, has been appointed Head Master of the new County Secondary School at Stowmarket, to be opened in September next.

* * *

Mr. Harvard Arundal, B.A., Principal of Dudley Pupil-Teacher Centre, has been appointed Head Master of the new Leiston Higher Elementary School.

Miss E. V. Ellis (Medieval and Modern Languages Tripos, Cambridge) has been appointed Head Mistress of the Brighton Municipal Secondary Girls' School.

* * *

An Assistant Lecturer in the Departments for the Training of Men Teachers for Elementary and Secondary Schools, Cardiff University College, is required. Apply to Mr. J. Austin Jenkins, B.A., Registrar, by August 31.

* * *

An Assistant Mistress is required for the County School for Girls, Folkestone. Initial salary, £100 to £110. Particulars from Mr. James Quick, Technical Institute, Folkestone. Applications to be lodged with Miss E. M. Ewart, M.A., Head Mistress of the School, by August 4.

* * *

Several of the masters of the Royal High School, Edinburgh, are retiring: Mr. Johnston Smith, Senior Mathematical Master; Dr. Cran, Senior French Master; Mr. Whyte, Senior English Master. Also Sergeant-Major Parker, Head of the Gymastic Department.

* * *

McMaster University, Toronto, requires Lecturers: (1) in French, (2) in Greek and German, (3) in History, (4) in Mineralogy and Geology. Initial salaries, 1,000, 1,000, 1,200, 800 dols. respectively. Also for Woodstock College, Woodstock, Ontario (boys, residential), a Master of French and German: initial salary, 700 dols. and residence. And for Moulton Ladies' College, Toronto, a Mistress of English and Junior subjects: initial salary, 400 dols. and residence. Apply to Mr. A. C. McKay, c.o. *Toronto Globe* Office, 222 Strand, London, W.C.

Literary Items.

The *Illustrated London News* has been giving a series of supplements treating of the industries in our great cities. The articles convey much information, both historical and technical, in an attractive form, and are very usefully supplementary to the ordinary text-book of geography.

* * *

The July number of *Child Study* has an able article on "Aims and Methods of Child Study," by Prof. Findlay, as well as other papers based on practical investigation.

* * *

The *International* for July offers two excellent educational papers: (1) "The 'New Education' in France," by Ferdinand Buisson, Member of the French Parliament, ex-Ministerial Director of the Educational Department; (2) "Higher Grade Schools in Denmark," by Helger Begtrup, of Copenhagen.

* * *

Mr. H. B. Henderson, assistant master at Rugby School, has written an introduction to the study of moths and butterflies for the Rugby School Natural History Society, entitled "The Scaly-Winged." It will be published immediately by Messrs. Christophers.

* * *

Messrs. D. Appleton & Co. promise immediately "Modern Educators and their Ideal," by Tadusu Misawa, Ph.D., a Graduate of the Tokio Imperial University and Honorary Fellow in Psychology at Clark University. The volume will give a general idea of the educational views of philosophers and reformers of modern times upon which present-day education bases its ideals and practices.

General.

The first stone of the new buildings of the Imperial College of Science and Technology was laid by the King, who was accompanied by the Queen (July 8).

In recent years [said the King] the supreme importance of higher

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scientific education has, I am happy to say, been fully recognized in England, and as time goes on I feel more and more convinced that the prosperity, even the very safety and existence, of our country depends on the quality of the scientific and technical training of those who are to guide and control our industry.

* * *

THE new University buildings at Birmingham were formally opened by the King, who was accompanied by the Queen (July 7).

For the wonderful progress of higher education in this country [said the King] we have largely to thank the great Universities established in our principal cities. No nobler object for munificence can be found than the provision of the necessary equipment for such education—an equipment which, in view of the diverse and elaborate requirements of the modern schemes of instruction, must be costly, but without which these schemes, however carefully designed, will prove fruitless.

* * *

THE King visited Marlborough College and Rugby School. At Rugby he inaugurated (July 3) a memorial to Dr. Temple—"the famous Head Master who, as Archbishop, placed the crown upon his head."

Rugby [said the King] is notable not only for its success in scholarship, not only for its men of letters, but even more for its high ideals of honour and manliness and public spirit, and all those qualities that make our public schools the finest places of education in the world.

* * *

THE new buildings of the Merchant Venturers' Technical College, Bristol, were opened by Lord Reay (June 24). The College will house the Engineering Faculty of the new University of Bristol.

If there is one thing more than another upon which I should like to lay stress [said Lord Reay] it is the secondary school. If there is one branch of education which we in England have, perhaps, neglected more than another it is secondary education.

* * *

ST. PAUL'S SCHOOL celebrated its fourth centenary by the opening of new science buildings by Lord Curzon of Kedleston (July 7). "But the real interest of St. Paul's," says a correspondent of the *Times*, "is that it could, if it would, in two years more, of certain knowledge celebrate its eight hundredth anniversary, and might with historical probability have celebrated its millenary twenty-three years ago. For St. Paul's School is one of the oldest of London institutions—older than everything else in London except the Chapter of St. Paul's, and as old as that."

* * *

THE new Engineering Laboratories at Manchester University were opened by Sir Alexander Kennedy, C.E., LL.D. (July 15).

* * *

BRADFIELD COLLEGE celebrated (July 16) the hundredth anniversary of the birth of the Founder (Rev. Dr. Stevens), and the fiftieth anniversary of its becoming a Public School. Dr. Gray was appointed Head Master in 1880 and Warden in 1881 on the resignation of the Founder. The boys then numbered 53; now they number over 300. Some eight hundred guests attended the commemoration.

* * *

THE five hundredth anniversary of the foundation of the University of Leipzig was celebrated July 28–31.

* * *

THE inauguration of Dr. Abbott Lawrence Lowell as twenty-fourth President of Harvard University will take place on October 6 and 7.

* * *

THE Orient Line of Mail steamers to Australia have offered to grant annually free first-class return passages to a limited number of graduates from the Universities of Sydney, Melbourne, and Adelaide, desirous to visit Europe to continue their studies. The selection is left to the discretion of the Councils of the Universities.

THE POSITION OF THE ASSISTANT MASTER IN FRENCH SECONDARY SCHOOLS.

By F. G. HANKS, B.A. Lond., Taunton.

AT a moment when the question "Should we be Civil Servants?" is engaging the serious attention of teachers in secondary schools, and organized inquiry into the conditions of service abroad is being instituted by the A.M.A., a short sketch of the position occupied by the French *professeur* as Civil servant or *fonctionnaire* may be welcome and instructive. It may help a little way towards a solution of the all-important questions: Would the teachers themselves be gainers or losers by adopting such a system? Would the system lead to greater efficiency in secondary education? Any small excursions beyond the limits of such inquiry may, we hope, be justified by giving a more complete picture of existing conditions in France.

French secondary education is administered by the Ministère de l'Education Publique. Its schools are the *lycées nationaux* and the *collèges municipaux*. The fundamental difference between these two classes of schools is that the *lycées* are maintained by funds voted annually in the National Budget, while the *collèges* can look to this source for a part only of their income, being dependent for the greater part on funds voted in the Local Budget. The programmes followed by both classes of schools are practically identical; but salaries in the *collèges* rule slightly lower, and, for economic reasons, the *collèges* are not infrequently understaffed.

Before passing to the actual figures of salaries it will be well to see what preparation and qualifications are required to become *professeur* in these schools, and what is the method of appointment. The preliminary scholastic career of the average *professeur* will have been somewhat of this order:—(1) Education in *lycée* or *collège* up to the age of eighteen or nineteen, finishing by taking his *baccalauréat*. (2) If possessed of sufficient means, he now spends two to three years in attendance at a University (*Faculté*) to obtain his Licence (about equal to Hons. B.A.). If means are lacking for this purpose, he may get himself nominated as *maître répétiteur* or *maître d'études* in a *collège*—a light post, with no teaching but only supervision duties, and with equally light remuneration, but which provides him with board and lodging in the school and affords free time for attending the courses at the nearest *Faculté* until he secures his *licence*. (3) Armed with this diploma (*Licencié*) he can now seek enrolment on the teaching staff of a *collège*, but not of a *lycée*. (As a matter of fact, there are so many *licenciés* that all cannot at once be nominated *professeurs* in the *collèges*, and a large number pass into the *lycées* as *maîtres d'études*, to continue preparation for a higher examination—*l'agrégation*.)

If our friend is still blessed with sufficient funds, he will follow neither of these paths, but will spend another two or three years of yet harder grind, perhaps at the Ecole Normale Supérieure of Paris, in order to become *agrégé*. To obtain this coveted diploma—at least equal to M.A., and to which our nearest equivalent is a "double-first"—he must pass in every part of the branch he selects: philosophy, history, classics, modern languages, as the case may be. He may now be nominated at once *professeur* in a *lycée*. A partial success, however, stands him in good stead, as he can then become *professeur* in a *collège*, and after five years' service therein can be nominated to a *lycée*. The ordinary *licencié* can secure such advancement only after ten years' service in a *collège*, and then only on the recommendation of an Inspector-General.

Now for the method of appointment to posts. A *professeur* is nominated to school so-and-so by the State (Ministry of Education). He can change schools only on making application to the *Ministère* (our Board of Education, a translation sufficiently eloquent to need no further hints of difficulties), and he needs to feel certain of sufficient *piston politique* to secure the post he demands before making such application.

The Ministry has the right to send a *professeur* to any part of France or her colonies by invoking "les nécessités de service"—an ominous formula which is used to soften down the causes, only too often political ones, which may necessitate the removal of a *professeur* to a school in some distant town. In any case, these "déplacements par nécessité de service" are considered as a punishment, and are, relatively speaking, infrequent.

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The scale of salaries in *collèges* and *lycées* is:

	Collèges.	Lycées.	
Class.	*Licenciés.*	*Licenciés.* (After 5 years' service in *Collège*, plus partial success in *Agrégation*, or recommended after 10 years in *Collège*.)	*Agrégés.*
6th	2,500 frs. (£100)	2,800 frs. (£112)	3,700 frs. (£148)
5th	2,900 frs. (£116)	3,200 frs. (£128)	4,100 frs. (£164)
4th	3,300 frs. (£132)	3,600 frs. (£144)	4,500 frs. (£180)
3rd	3,700 frs. (£148)	4,000 frs. (£160)	4,900 frs. (£196)
2nd	4,000 frs. (£160)	4,400 frs. (£176)	5,300 frs. (£212)
1st	4,400 frs. (£176)	4,800 frs. (£192)	5,700 frs. (£228)
Hors Classe, 6,200 frs. (£248)			

Until last year *professeurs* were promoted from one class of salary to the next as follows:—50 per cent. of the promotions were made according to duration of service; the other 50 per cent. were made by selection, on the recommendation of the head of the school and of the Inspector-General. Nowadays, only 15 per cent. are promoted by selection; the rest pass automatically from one class to the next in this way: from the sixth to the fifth class after four years' service; from fifth to fourth after five years; from fourth to third after six years; from third to second after seven years; from second to first after seven years. No one can be promoted by selection unless he has spent a minimum of two years in the sixth class, three years in the fifth, four years in the fourth, five years in the third, five years in the second, so that promotion by selection can give at most only a two years' advantage to a *professeur* over his colleagues promoted according to duration of service. This is the first great victory the *Fédération* of French teachers boast of having secured.

A pension is granted to teachers at sixty years of age with a minimum of thirty years' service. The teacher contributes 5 per cent. of his salary and the first one-twelfth of each increase of salary. The State votes annually the necessary funds for management, and, I believe, supplies the deficit existing between contributions and payments. The teacher can demand his pension at sixty years of age at the earliest; he then receives per annum thirty-sixtieths, thirty-one-sixtieths, thirty-five- to forty-sixtieths of his last salary according to whether he has given thirty, thirty-one, thirty-five or forty years of service—*e.g.*, a *licencié* in a *lycée* who has reached Class I. after forty years' service will receive forty-sixtieths of 4,800 francs = 3,200 francs £128) per annum—a very favourable case. The present arrangement is not in high favour with teachers, and the *Fédération* is working hard to make this pension obtainable after twenty-five years' service.

These facts afford a striking contrast between the organized system of secondary education in France, with its classified, docketed, highly qualified servants who can only attain their position after years of strenuous work, and our own lack of an organized system, our haphazard methods of recruiting our forces. Whether such a systematized yoke would sit easily upon our free and independent necks must be left to general judgment. A few final remarks on matters of personal observation may be of interest.

Under the French system "officialdom" thrives and flourishes. It is not a little alarming in a French *lycée* to find oneself receiving orders from (1) the Proviseur, (2) the Recteur, (3) the Surveillant—from whom may we long be spared!—while (4) on all internal and household arrangements and receipt of salary one has to consult M. l'Econome. The social status of the French *professeur* is on an equality with that of other professional men; but, as our figures showed, he is far from being as rich—a condition of things with which we can fully sympathize. An average number of teaching hours per week for a *professeur* would be twenty, and in giving this figure as an average the error is probably on the large side.

With regard to the effects that being a Civil servant, with a secured position and future, exerts upon effort and initiative, it is not easy to give a decided opinion. Naturally it resolves itself, for the most part, into a *personal equation*. There are many *professeurs* who reduce both effort and initiative to the strictest minimum, and as many others who go to the opposite extreme. Still, it may be instructive to quote a proverbial saying in France: "Le fonctionnaire est une bonne grosse bête à l'engrais"—"a good animal for fattening."

There can hardly fail to be a great temptation for a man who has expended a great part of his best energies in attaining the high diplomas that are necessary for a French *professeur* to accept, with contented ease, the assured tenure of his position, the certainty of increasing salary, the prospect of a pension at a fixed time, and to sit tight, finding out what is the "irreducible minimum" of effort that may satisfy the powers that be. Yet, as that minimum is not an unknown quest among us who have not even the good excuse of a secured position to offer, that question, as was said before, resolves itself into a personal equation.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—Ed., *E.T.*]

"HEAD MASTERS AND ASSISTANTS."

Too Much Lower Form.

To the Editor of "The Educational Times."

Sir,—The short letter of "A Second Master" in your July issue refers to the difficulties of rightly regarding the teaching of the younger boys in a school. In my earlier experience—now fifty to sixty years past—I realized this difficulty until I met C. Pearson Mason at the very instructive and enjoyable meeting of the College of Preceptors at Canterbury, under the generous and genial ægis of Canon Mitchinson. Pointing out the difficulties of retaining the services of a really efficient man for these boys—ranging from eight to twelve years of age—Mr. Mason told me he had discovered this, and found an efficient remedy in employing a lady teacher for this class. I at once adopted his method and found it in every way good. You get in a lady teacher more experience, commonly more tact, more sympathy with her class, more satisfactory results, and a satisfaction with her employment which leads to long engagements. Practically, I had only three of these lady helps in twenty-eight years, and each and all of these were a decided success.

Another point suggested by the letter of "A Second Master," and one which I regarded as of prime importance during my forty years' experience (1848–1888) at the head of a large resident school, is that of *class masters versus subject masters*. I reasoned thus: a master can always teach best the subject he knows best and in the teaching of which he has had the larger experience. It is not profitable to a school to employ A. to teach a subject whilst B., who knows it better and can teach it more effectively, is possibly employed in teaching some other subject of which possibly he knows less and is a less effective teacher. Again, in a school worked by class masters there is the frequent complaint regarding failures that they are due to the defective work of the master below who has sent the boy up. This trouble is avoided by working a school with subject masters. Then every master is himself only responsible for the condition of a boy on remove, and the tenure of his post must be contingent on the efficiency of his work: and any man who is worth his salt will feel pride in the efficiency of his work and the progress of his boys.

Again, Nature revels in variety: training her structures up from the mineral, through the vegetable and animal worlds, her variations are infinite and marvellous. And in man, the highest outcome of her creative powers and the most highly differentiated, these variations culminate. There never has been, there never will be, two human beings alike. These variations are vividly apparent in a school, and strivings here, as elsewhere in the human fabric, for uniformity of thought or action are futile and often lead to antagonistic feeling. Where this exists between master and boy, the educational efforts of the master and the studious toils of the boy are sadly marred. In the case of class masters, the boy so circumstanced gets little or no relief and his education is gravely retarded. But when the school is ordered for subject masters, the boy presently passes from the gloom of antagonism to sunshine, warmth, and sympathy, and his losses are reduced to a minimum.—I am, Sir, &c.,

Thomas Wyles.

July 6, 1909.

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THE GERMAN HIGHER SCHOOLS.

THERE is perhaps no sphere of German education which embodies more of the results of expert deliberation and of official nurture, or over which has been waged more acute controversy (says a writer in the *Glasgow Herald*), than that of so-called "higher schools." Even to-day this part of the system is by no means in a fixed or settled state, but reflects from time to time the varying influences of reform, conservatism, and compromise. And yet these higher schools have compelled the respect and almost universal admiration of foreign educational critics who attribute to the steady stream of highly developed intelligence which for the last two generations has issued from them no inconsiderable share in the industrial and commercial advancement of Germany. Before, however, we proceed to the details of the Prussian secondary system, there are certain considerations to be borne in mind if we would adequately appreciate its underlying principles.

Educational Differentiation.

The best German opinion firmly believes in the doctrine of a sound general education, and is decidedly averse from premature specialization; but at the same time it constantly tends to associate closely any particular sphere of work with the course of education best suited, according to experts, to afford it a preliminary preparation. Thus there is scarcely an occupation, scarcely a grade in the occupation, but is reached through some definite propædeutic type of education. The workman, the foreman, and the directing head in a business, each advances towards his position and status along a pretty definite educational groove. In Germany life is apt to be more distinctly demarcated than with us, and there is much less there than in more democratic countries of a youth entering at an early age some occupation which may have been casually adopted, and for which he may have received little specialized training, and ultimately rising to the top of the ladder by sheer force of grit and brains. One would therefore look for considerable differentiation in the educational activities of Germany; and, what with technical schools, commercial schools, continuation and trade schools of all kinds, not to speak of distinctive types of secondary schools, this is actually what we find.

The Grip of the State.

It is further necessary to realize the remarkably firm hold exercised by the State over the higher schools. This power it exerts by granting highly valued privileges to approved schools, offering at once a strong inducement for the youth of the country to pursue higher studies, and retaining in her own hands the right to prescribe the lines these studies must follow. Of these privileges, the most important is the granting of what is called the "Zeugniss für den einjährig-freiwilligen Militärdienst"—the certificate entitling the holder to serve for one year in the Army as a volunteer, paying his own expenses, rather than serve for two years as a paid conscript. The value of this certificate extends far beyond its military significance. It has come to be regarded almost as a social imprimatur; it marks off the educated from the uneducated. The status of "a one-year man" is a prize much sought after by the German youth, and sometimes even more by the German youth's parents. Moreover, the certificate has come to possess a definite value in the business world, the possession of it being made a condition of appointments by all the leading firms. To secure this certificate, a boy must have completed a six years' course of secondary education in an approved school. Such a course begins at or about the pupil's ninth year of age, and may be completed either in a six-year school or in a nine-year school. In either case an examination called the *Abschlussprüfung* has to be passed. Another privilege offered by the State through the medium of the higher schools is admission to the Universities, the completion of various types of secondary education being made the condition of entrance to the various faculties, so that in this way the State controls the approaches to all the learned professions. Similarly, permission to prepare for almost all important Civil Service appointments is granted only to those completing certain stages of an approved type of higher education; and, generally speaking, this system of privileges gives to the Central Authority in Germany a power and an extent of jurisdiction which we can with difficulty realize. Bearing in mind, then, the high differentiation of school types, and the close hold maintained by the State over education, we may now consider in outline the Prussian system of higher schools.

System of Administration.

The stage of education which we are to deal with includes, roughly, what we mean by intermediate and secondary education for boys, and something more. With the higher education for girls—and they are taught in separate schools—we shall not concern ourselves beyond remarking that German girls' schools are by no means in the same high state of development as those for boys. But first a word as to administration. The central authority is the Ministerium, having for its Parliamentary chief the "Minister for Religious, Instructional, and Medical Affairs." The general supervision of educational matters is in the hands of this department, or, rather, of a section of this department, presided over by permanent officials, to whom is joined a Committee of Advisers (*Räte*). A great deal of the actual work of administration, however, is devolved by the Central Authority on Provincial Committees (*Provinzial Schulkollegien*), of which there is one in each of the Prussian provinces. These committees consist of a few carefully selected experts appointed by the Department and presided over by the *Oberpräsident* of the Province. They exercise a general supervision over the higher schools, inspect them, appoint or transfer the teachers, regulate what text-books are to be used, and frame rules for the leaving examinations. In fact, it is the function of these experts to see that the higher schools are maintained in a high state of efficiency, and a recent American critic has expressed the view that they constitute the mainstay of the Prussian higher-school system.

Classes and Types.

Of the higher schools some, called "Royal" (*Königliche*), are State schools pure and simple; others are founded and maintained by municipalities and communities; others are partly State, partly municipal; while some are purely private foundations. Over the instructional arrangements of all schools the State keeps complete control, and no private school is permitted to continue the efficiency of which, as tested by inspection, falls below the level of State institutions. When a municipality establishes higher schools of its own, these are generally managed by a composite School Committee, called a *Schuldeputation*, and much of the technical detail is entrusted to a paid expert official. In the city of Berlin there are seven "Royal" or State higher schools and forty-two municipal higher schools doing different types of secondary work.

It has been remarked that the higher schools fall into clearly defined types, and it is necessary now to consider briefly what these types are. It is possible to regard them from two points of view. We may consider either the kind of curriculum professed or the extent of that curriculum. From the first point of view the schools differ according as they offer (*a*) a purely classical education; (*b*) a semi-classical education; (*c*) a purely modern education, or, to be more exact, according as they teach (*a*) both Latin and Greek, (*b*) Latin without Greek, (*c*) neither Latin nor Greek, but modern languages, with mathematics and science. In each type a linguistic training forms the basis of instruction, though, of course, languages are not the only subjects taught.

Curricula.

As regards the extent of curriculum, each of these types is found in a complete nine years' form and in a shortened six years' form. The purely classical school with a nine years' course is called the *Gymnasium*, the semi-classical school of similar extent is called the *Realgymnasium*, and the nine-year purely modern school is called the *Oberrealschule*. In each type the pupils begin at nine years of age, and, if they continue to the end, they remain, as a rule, nine years at least. As showing, however, how much longer the pupils remain in Prussian high schools than in ours, the following figures are instructive. For the year 1906–7, over all the *Gymnasien* in Prussia, there completed the full curriculum (or, as the Germans put it, "were declared ripe"), 238 pupils at 17 years of age, 1,426 at 18 years, 1,672 at 19 years, 1,126 at 20 years, 1,057 at 21 or over.

As one might have expected, there grew up a demand for a course of secondary instruction less extended than nine years, and in consequence there has come to be recognized a clearly defined course of six years' duration. This six years' course, or what might roughly be termed an intermediate course, may be undergone either in distinct six-year schools, or simply by taking the first six years of a nine-years' school. That is to

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say, at the end of the sixth year in the complete secondary schools there is a natural break (or, as others say, an unnatural break) in the curriculum. What has led especially to the recognition of this shorter six years' secondary course is the fact that this is the condition required for the examination for the "one-year military service" certificate, and naturally a large number of students do not continue their secondary education beyond this stage.

It should be added that the shorter six years' course may be either (*a*) purely classical, or (*b*) semi-classical, or (*c*) purely modern. The six-year schools of the purely classical type are called *Progymnasien*, of the semi-classical type *Realprogymnasien*, and of the purely modern type *Realschulen*. This last type is the most predominant on the purely modern side. The names of these different kinds of school are at first somewhat confusing to the foreigner; but it is sufficient if we keep clearly in mind that a higher school in Germany offers a clearly defined type of education, devised under expert opinion to meet peculiar needs. What the German parent of the upper and middle classes has to decide for his boy (and that, too, at the early age of nine) is not what side of a school he shall enter—*e.g.*, the classical side or the modern side—but to what type of school he is to be sent, whether to a wholly classical school, or to a wholly modern school, or to a type representing a compromise between these two.

AN OPPORTUNITY FOR THE PIOUS BENEFACTOR.

THERE is no more striking symptom of the educational ferment in the midst of which we are living (says the *Morning Post*) than the discovery on the part of Universities and colleges that they cannot meet the demands made upon them with their existing endowments, and their constant appeals for increased assistance. Their financial hunger is in every way an encouraging symptom. One cannot have a Renaissance in art, or science, or education, or anything else, without paying for it, and the appeals which flood the Press are a testimony not only to what remains to do, but to what has already been done, to improve secondary education, to a widened spiritual horizon, to the pressing upwards of new classes with new intellectual needs which cry to Universities and colleges for satisfaction. But in the meantime the strain upon existing institutions is very severe, and all the more severe because English University education occupies to-day a somewhat unstable equilibrium between public maintenance and private generosity. In Germany Universities are financed by the State Governments to the amount of considerably over a million pounds per annum, and if they lose something in elasticity and independence they gain much in security. In America a use has been found for the millionaire; he has been placed between the shafts and taught that if he is to justify his existence he must subscribe liberally to education, with the result that, though much more public money is spent on University education in America than in England, it is a bagatelle compared with the huge sums given by private persons.

In England University education has been starved by the State: the £200,000 a year which is (speaking roughly) the whole sum given both by National Departments and Local Authorities to English Universities and colleges is not a fifth of the amount spent by public bodies in Germany and America on the same object. But it has not as yet been able to rely with any certainty on the pious benefactor, who is ready enough to endow hospitals, or charities, or institutions which undertake to relieve some visible (and sometimes unrelievable) distress, but who has apparently not yet learned that the expenditure which builds up future generations is at least as laudable as the expenditure which softens the suffering of the present. There are, no doubt, brilliant exceptions—exceptions which make one hope that their attitude may in time become the rule. But the worst of it is that even when gifts are made to University education by private generosity the number of competitors for them is so large that they do not always go to the places which need them most, and that the net result is sometimes very far from that which would be aimed at if national efficiency were the sole consideration. Oxford, for example, which to-day receives from endowments an annual income of a quarter of a million, appeals for £250,000 more, and has already got £150,000, because of its great prestige and because it can draw on the loyalty of a moneyed class. But how difficult it is for the newer Universities to raise money, even though they are situated in wealthy industrial towns! How difficult it is to get endowments for subjects which are not of immediate practical utility! How almost impossible, above all, to get money for the education of women!

These considerations must inevitably come home with great force to any one who glances at the position of the various women's colleges, as set forth in the appeals that from time to time appear, and of which the public has recently been reminded by the movement for increased endowments on the part of Bedford College. The income of such colleges is usually almost incredibly small. The fees must be low in order to admit students whose financial resources are slender, and their endowments, apart from fees, are almost non-existent. At Girton, for example, the fees to cover all expenses of education, residence, and examinations amount to only just over £100 per annum, while the income from endowments, apart from special scholarships, is less than £400. At Bedford College for Women, which is one of the constituent colleges of London University, the average annual amount of fees for instruction and residence is about £100 for a resident student, for a day student £26 to £48, according to the course pursued. It receives a small annual grant from the London County Council in return for keeping free places for a certain number of its scholars, and between £4,000 and £5,000 a year from the Treasury; but apart from these it is without endowments. Both these institutions (to mention only two of several colleges for women) are, as might be guessed from a bare statement of their financial position, urgently in need of increased funds to meet the building expenses entailed upon them by the inevitable increase in the number of students, who at Bedford have grown in the last five years from 224 to 296. It is surely difficult to imagine any more deserving object for the generosity of those who have money to spare for promoting high public ends than the endowment of women's education at these or similar colleges. Both Bedford College and Girton have, each in its own way, been pioneers in the matter of women's education, the former in being the first college to offer scholarships and fellowships to women, the latter in the inauguration for women of residential University life. On the value of the work which they have performed it would be a kind of pedantry to speak. The days when the movement was militant are long since over, and nobody beyond a few eccentrics now doubts that women need a University education as much as men or that they can turn it to as good a purpose. The women of distinction who have passed through Girton in its short forty years' existence are too numerous to mention, while the way in which a single college can influence an important and delicate branch of the public service is shown by the single fact that out of the fifteen women factory inspectors in Great Britain considerably more than a third were educated at Bedford College. At a time when both the demand for trained women in every kind of education and administrative work and the supply of women willing to seize opportunities for qualifying themselves for such work are increasing, it is little less than astonishing that such institutions should be hampered even temporarily by lack of funds.

Perhaps one of the reasons why wealthy men do not come forward with their offerings is that they are under the impression that the full cost of education ought to be covered by the fees charged, and that the cry for endowments is an indication of wasteful finance. This is a common delusion; but it is a delusion nevertheless. The truth is that University education never has been and never can be self-supporting, in the sense of obtaining from the students payments sufficient to set aside for capital expenditure upon the extension and repair of buildings or the acquisition of new sites to accommodate a growing body of learners. Moreover, every advance in science increases the cost of University education. The fifteenth-century student might limit his anxieties to straw and candles. But the governing body of a modern college has to maintain the costly plant of laboratories, libraries, and lecture rooms, and in a populous city that alone absorbs a sum which is many times the tiny endowment of most women's colleges. When, therefore, a college such as Bedford College, with the approval of the Senate of London University, is asking for a sum of £75,000 to enable it to provide accommodation for an increased number of students, it can claim that its need of money is due to the very success of the work which it has accomplished in the last sixty years. Women's education, unlike that of men, has never yet been properly endowed in this country, and no one will have a greater claim to the gratitude of posterity than the far-sighted benefactor who does for it what the generosity of a more pious, though a poorer, age did in the past for Oxford and Cambridge.

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REVIEWS.

THE FOUNDER OF ST. PAUL'S SCHOOL.

A Life of John Colet, D.D., Dean of St. Paul's, and Founder of St. Paul's School. With an Appendix of some of his English writings. By the late J. H. Lupton, D.D., formerly Sur-Master of St. Paul's School, and Fellow of St. John's College, Cambridge. New edition. 8s. 6d. net. George Bell.

In connexion with the four hundredth anniversary of St. Paul's School, Messrs. George Bell & Sons have opportunely issued a new edition of Dr. Lupton's comprehensive and sympathetic life of the great founder of the institution. The first edition appeared some twenty-two years ago, and, though Dr. Lupton's account of the foundation of the school has not been universally accepted by other scholars, this part of the work remains unchanged, as not materially affecting the biography; nor has the additional information gained about Colet himself since 1887 been held to require or to justify any searching revision of the book. Curiously enough, Dr. Lupton does not expressly state (so far as we have observed) when Colet was born; but, as he died in 1519 at the age of fifty-three, the date is 1466. He was the son of Sir Henry Colet, who came from the Hale, near Wendover, Bucks, and, as a prosperous mercer, became Lord Mayor of London (1486 and 1495), and of Christian Knyvet, or Knevet, who was highly connected on both sides of her family. Over the school life of Colet there hangs much uncertainty, but Dr. Lupton expounds at length what he might, could, would, or should have studied. Colet certainly studied at Oxford, but where and what is not very clearly determined; so Dr. Lupton again expatiates on the probabilities and possibilities. Colet then travelled on the Continent, and once more he has left few tracks; but, once more, Dr. Lupton speculates. Colet is next found lecturing at Oxford "publicly and gratuitously upon St. Paul." It is easy enough for a comparatively rich man to lecture gratuitously upon anything. However, it was here that he came into contact with Erasmus, who thus describes him: "He seemed like one inspired. There was a loftiness and dignity in his mien almost more than human. His voice, his looks, his whole aspect were changed, and seemed to grow upon you as the enthusiasm carried him along." Before his Oxford work, he had gained preliminary experiences in several benefices, readily found for him by his influential relatives; the list, Dr. Lupton admits ruefully, "looks a culpably long one," and he does not excuse it when he produces the longer list of Colet's immediate predecessor in the deanery of St. Paul's. It was the way of the times—and perhaps of other times. Dr. Lupton leaves us (if we mistake not) to find out by inference that Colet became Dean of St. Paul's in 1504; but he describes very fully "the great work done, and the still greater work attempted," by the new Dean.

A St. Paul's (Cathedral) School was already in existence. "It seems clear that it had tended to become more and more a purely singing school, in which interludes and similar performances could be conveniently prepared, while the grammatical or literary side of the education given had not been equally sustained." Yet why should Colet not have developed this school, instead of proceeding to found a new one? Dr. Lupton finds the reason in the obstructiveness of Dr. Lichfield, the Chancellor (Magister Scholarum) of his time, under whose immediate control the cathedral grammar school was placed. Anyhow, about the year 1509, Colet, who had become a tolerably rich man by succeeding to his father's estates, began the foundation of a school "in the east end of Paul's Church, for a hundred and fifty-three to be taught free in the same." Why the odd number of 153? Colet has left a memorandum in these words: "Of halidayes and halfe halydayes all noumbred togyther in whiche ys no teachinge ther be yn the hole yere vii^{xx} and xiij"—that is, 153. Dr. Lupton gives other suggestions; but it does seem curious if Colet had determined the number of his free scholars by the number of the days of the year on which there was no schooling at all. However, the school was freely open, without restriction of locality, "to the erudycion and profyte of chyldren," "of all nacions and countres indifferently," but naturally Colet hoped for "my countrey men Londoners specially." "Over the revenues, and the entire management," Erasmus significantly adds: "he set neither priests nor the bishop nor the chapter (as they call it) nor noblemen, but some married citizens of established reputation. And, when asked the reason, he said that, though there was nothing certain in human affairs, he yet found the least corruption in them." Dr. Lupton pays a well-deserved tribute to the management of the Mercers' Company. "The large scale on which Colet planned his school is deserving of notice no less than the liberality and foresight displayed in his ordinances." Dr. Lupton "cannot find evidence, so early as 1510, of any other school with so large a number as 153 boys in attendance, and three masters engaged in teaching them." "Winchester had but seventy scholars, with sixteen choristers besides. Eton had seventy, and still fewer choristers." In prescribing the subjects of instruction, Colet showed "wide and liberal views, not untinged with severity." Dr. Lupton quotes Colet's drastic words:—

> All barbary, all corrupcion, all laten adulterate, which ignorant blynde folis brought into this worlde, and with the same hath distayned and poysenyd the old laten spech and the varay Romayne tong which in the tyme of Tully and Salust and Virgill and Terence was vsid; whiche also seint Jerome and seint Ambrose and seint Austen and many hooly doctors lernyd in theyr tymes—I say that fylthynesse and all such abusyon which the later blynde worlde brought in, which more rathyr may be callid blotterature thenne litterature, I vtterly abbanysh and exclude oute of this scole, and charge the Maisters that they teche all way that is the best, and instruct the children in greke and redyng laten, in redyng vnto them suych auctours that hathe with wisdome joyned the pure chaste eloquence.

While insisting on "good literature, laten and greke," and especially such authors as had the "veray Romayne eliquence joynyd with wisdome," he would also have "specially Cristyn auctours that wrote theyre wysdome with clene and chast laten other (either) in verse or in prose." The appointment of William Lily, one of the best, if not the very best, of the half-dozen men in England capable of teaching Greek, to the office of High Master, "gave to St. Paul's the proud distinction of being the first school in which Greek was publicly taught in England after the revival of letters." One of Colet's humane provisions for his scholars was: "I will they use no kokfighting, nor rydyng aboute of victory." If the masters' stipends were not to be augmented as in many another school by "cock-penny, victor-penny, potation-penny, or any other whatsoever it be," they were still on a liberal scale for the age, a scale that shows Colet's high estimation of their office.

Dr. Lupton's biography not only marshals and appreciates all the materials available in 1887 for the personal and official life of Colet, but affords luminous views of the whole panorama of learning and of learned men within the sphere in which Colet moved. No doubt Colet had his imperfections—Dr. Lupton disposes of a good few depreciatory allegations—but he was nevertheless a good man and a high-minded citizen. Erasmus grieved for his death—"a death so bitter to me," he wrote, "that the loss of no one for the last thirty years has afflicted me more. . . . In the public interest, I cannot but lament the loss of so rare a pattern of Christian piety, so unique a preacher of Christian doctrine." He would "not suffer the memory of such a man to die out among posterity," and wrote his life as well as he could on the materials within his reach.

THE APOTHEOSIS OF DEBT.

An Empire in Pawn. Being Lectures and Essays on Indian, Colonial, and Domestic Finance, "Preference," Free Trade, &c. By A. J. Wilson. (10s. 6d. net. Fisher Unwin.)

The age of chivalry is not yet gone. The realms of finance and politics are not perhaps the likeliest of places to look for knights-errant, spear in rest, ready to redress wrong at all hazards and to maintain right against all odds. Still, in sober fact, such has been the attitude of Mr. A. J. Wilson for the past generation, whether as financial editor of great London dailies or as proprietor and editor of the *Investors' Review*. No public man of our time has more steadily and strenuously fought for sane public policy and for clean financial and commercial dealing. The chapters of the present volume range over the whole field of finance, public and private; and though they are mostly reprints from earlier works, or from later issues of the *Investors' Review*, the principles remain unchanged and the discussion is just as fresh to-day as ever it was. Mr. Wilson is regarded as a pessimist—a financial Cassandra; but he sets out his reasons explicitly and forcibly, and it is vastly easier to fling an epithet at him than to grapple with his arguments. The burden of his jeremiad is the gross abuse of credit. "My contention," he says, "has always been the simple one that debt is a cancerous disease and morally deadly in the course of time alike for the nation and the individual; and, inasmuch as the age we live in is distinguished above all that have gone before

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it as the age of credit, which means debt, it follows that the peril is the greatest ever seen, and it grows in intensity—the peril to our civilization and liberties." One must survey the whole Empire and figure out the details in order to form any rational "conception of the extent to which our civilization has been created by and is buoyed upon debt." "By help of credit we have carried on our wars, created our iron highways, cleansed and beautified our cities, and enlarged our dominions; and now credit is called in to assist us in keeping our unemployed from dying of starvation." Our national and local debts run deep into ten figures, and "all over the Empire the same process has been in operation—in India, in Canada, in Australasia, in whatever spot the British flag is hoisted"; "nowhere in the world has the process of enslavement by debt been more actively in operation than in South Africa since the close of the last war."

If the credit-woven obligations of the populations embraced within the limits of the great British Empire be all added together, it will be found no exaggeration to say that these populations are expected to sustain the charges imposed by a compulsory mortgage load of some £4,000,000,000 sterling. In other words, from £150,000,000 to £200,000,000 is expected to be furnished out of the product of the people's labour each year in the way of debt interest, and all in addition to the ordinary cost of government, which is likewise increasing fast. For the multitude, no matter what the population may be—and of whites it is well under 60,000,000—this must mean augmenting misery, no matter how science and invention may come to their help, no matter what the advantages gained may be, and the misery will more and more find its expression in political unrest, in quack nostrums to cure social anomalies, and, it may be, in efforts at revolt.

There is the problem. It is more than twenty years since Mr. Wilson propounded it, and he faces squarely the retort that his predictions of approaching financial confusions have not yet come true, and may therefore turn out to be false after all. The obvious answer is that the anticipated disaster has been staved off by continual application of further doses of credit. "The centre of the whole system of enslavement through debt," he says, "is London. All rests upon the old country and her credit-generating machinery, and I was too eager to see the end of a deadly usage, it must be admitted; so that I did not properly measure the resources of the home-distiller of market credit, of what is called money, by whose help the *dénouement* has been pressed back; but the end will only be the more disastrous when it does come." The system depends on the presupposition of eternal prosperity. The moment our prosperity receives a serious check, the significance of Mr. Wilson's argument will be ruefully realized.

We leave the reader to follow Mr. Wilson through his examination of the financial expedients and conditions of the various parts of the Empire. The subject is too important for any one that has at heart the true interests of the country to fail to study his chapters in detail. The style is direct and breezy, and always piquant; and, if there is occasional bitterness, the facts and arguments will amply explain and condone it. The volume is most opportune and, to our mind, of the highest importance.

EQUATIONS.

"Cambridge Tracts in Mathematics and Mathematical Physics." —No. 6, *Algebraic Equations.* By G. B. Mathews, M.A., F.R.S. No. 10, *An Introduction to the Study of Integral Equations.* By Maxime Bôcher, B.A., Ph.D. (2s. 6d. net each. Cambridge University Press.)

The subjects treated in both these numbers of a noteworthy series are of fundamental importance and great mathematical interest. Each is discussed with expert skill and likely to attract the notice of students of advanced mathematics, to many of whom both should prove very helpful.

In the earlier tract Prof. Mathews considers the theory of algebraic equations, discussing it on the lines followed by Evariste Galois. The selected basis of treatment is preferred by the author to the method of Abel, inasmuch as it gives, as far as is possible, a specially clear algebraical analysis of the system of roots which satisfy any given equation with numerical coefficients. Indeed, Abel's method is, by reason of its less lucid and precise character, passed over by the writer, and the decision to omit its full discussion gives less restricted opportunities for the introduction of valuable illustrative examples in the course of a short tract such as the present one. Half of the brief treatise before us is occupied by its opening chapter, in which the author undertakes the detailed investigation of the theory of Galoisian Groups and Resolvents, dealing in the first instance with the theory as applied to the cubic equation with arbitrary coefficients, and subsequently taking up the general problem as attacked by Galois. Clearly worded demonstrations, free from other than inherent difficulties, are given of the essential theorems. Chapters ii. to iv. may be looked on as applications of the general theory to particular types of equations. Cyclical, Abelian, and Metacyclical equations are discussed in succession, while the fifth and last chapter of the booklet is devoted to the consideration of solutions by standard forms. A number of short notes, chiefly bibliographical, close the necessarily brief, but very valuable, tract.

Prof. Bôcher also treats of the theory of certain equations, but here the equalities which form the subject of investigation are such as exist between functions occurring under one or more signs of definite integration. Hence arises the distinctive epithet *integral.* The attention of mathematicians was called comparatively recently to equations of this type, and history repeats itself in connexion with them, since the research owes its prosecution, if not its origin, to the fact that equations of the kind presented themselves in the process of investigating definite mechanical problems, as, for example, that which Abel set himself—namely, the converse of the following: "Given the *shape* of a smooth curve in a vertical plane, down which, to its lowest point, a particle slides from rest, to find the whole *time* of descent." The author of the tract follows essentially the course of historical development, and presents to his readers in very concise form the various steps in the argument, as he gradually builds it up, wisely commencing with a number of preliminary propositions in integral calculus which bear on the later portions of the text, but the deferred proofs of which would tend to break the continuity of the main theory. The author endeavours—and it would appear that he does so very successfully—to render his tract valuable to at least two distinct classes of reader: (1) to the leisured and earnest student of mathematics, who may by its means acquire thoroughly a knowledge of the groundwork of the subject, and thus prepare himself for a more exhaustive study of it; and (2) to the reader whose chief object it is to be acquainted with results as distinct from the rigid proofs on which they rest. For the latter the arrangement of the work provides a careful and well defined summary, whilst to the former the argument, as it proceeds from point to point, will unfold itself very forcibly. The index provided enhances the value of the pamphlet, both for purposes of reference to its own pages and by furnishing a list of mathematicians who have contributed, directly or indirectly, to the investigation of these equations.

GENERAL NOTICES.

MATHEMATICS.

Advanced Arithmetic and Elementary Algebra and Mensuration. By P. Goyen. (3s. 6d. Macmillan.)

The publication serves as a new edition of the author's earlier work, "Higher Arithmetic and Elementary Mensuration." At the same time, even a merely superficial comparison of the volumes in question shows at once that the present issue is in no sense a reprint of its predecessor. The contents of the latter have undergone rearrangement, and very considerable alteration and amplification, so that in its present form the work reflects the modern ideas with regard to mathematical teaching and the principle of correlation. Chapters on the notation of algebra, on its elementary rules, and on equations stand at the opening of the new treatise, and index notation introduced into the study of decimals leads readily to the treatment of the principles of logarithms, which forms the subject of early subsequent sections. Diagrams help to illustrate methods of procedure, and graphs find a place, as in nearly all the recent text-books.

Algebra. By Charles Davison, Sc.D. (6s. Cambridge University Press.)

A lucid treatment of the subject, in which the matter discussed is arranged as a course suitable for the junior and middle forms of secondary schools. The rules of the science are deduced principally from those of arithmetic, in accordance with the generally accepted view that this method furnishes the simplest as well as the natural introduction to the study of algebra. A full consideration of the early bookwork has been purposely omitted as being beyond the comprehension of the beginner, but the author believes that in other respects a sufficiently close discussion of the theory has been undertaken. The light of graphical work lends its aid to the treatment of equations, where those considered include not only linear and quadratic expressions, but also such as involve powers and products of the variables of more than two dimensions. The volume contains a very large selection of exercises, the answers to which are furnished.

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Intermediate Geometry. By Alex. Leighton, M.A., B.Sc., F.E.I.S. (1s. 6d. Blackie & Son.)

A compact little volume containing a great deal of very useful information, and providing a combined course in experimental, practical, and theoretical geometry likely to give valuable assistance to teachers of the subject. In scope the work embraces the geometry required of candidates for a number of University entrance examinations and others of approximately similar standard.

SCIENCE.

Elementary Science for Pupil Teachers. Physics Section, by W. T. Clough, A.R.C.Sc. Lond., F.C.S., Fellow of the Physical Society, Head of the Physical Department, East Ham Technical College. Chemistry Section, by A. E. Dunstan, B.Sc. Lond., F.C.S., L.C.P. (Hons.), Head of the Chemical Department, East Ham Technical College. (2s. Methuen—"Text-Books of Science.")

In both sections the exposition is concise and lucid, the principles are illustrated by well chosen experiments, and suitable exercises and examples are provided as practical tests. The volume is illustrated by numerous diagrams closely pertinent to the text. An excellent introductory manual.

Elementary Statics. By W. G. Borchardt, M.A., B.Sc., Assistant Master, Cheltenham College, formerley Scholar of St. John's College, Cambridge. (4s. 6d. Rivingtons.)

Mr. Borchardt introduces the student to the fundamental ideas of the science of mechanics by presenting some of the historical experiments from which it has been evolved; he takes care to give experimental illustrations before plunging into theoretical expositions; and he uses graphical methods with discretion and effect. The principles are concisely and lucidly set forth, and there is an abundance of discriminating exercises and papers, the answers being appended. 262 figures. A most attractive and efficient text-book.

Practical Physics. By Lionel M. Jones, A.R.C.Sc., B.Sc., F.C.S., Head Master of the Central Secondary School, Birmingham. (3s. Longmans.)

Mr. Jones here provides a systematic course of practical work in physics, in which the essentials of the subject are developed from the work of the pupils themselves. "A pupil working the course, assisted by explanations and natural extension of the work on the part of the teacher, would obtain a thorough grasp of the foundations of heat, light, and electricity, and a good working knowledge of the methods of investigation in these subjects." The course has been in use in Mr. Jones's school for several years with pupils from fourteen to seventeen years of age, and every experiment described in the volume has been performed by the pupils in his laboratory. The work is thoroughly good. Plenty of exercises are proposed, and sets of general revision exercises are appended. The illustrations are numerous and effective.

Messrs. Crosby Lockwood & Son issue a fifth edition of *Practical Building Construction*, by John Parker Allen, Professional Associate of the Surveyors' Institution, formerly Lecturer on Building Construction at the Armstrong College of Science, Newcastle-on-Tyne (7s. 6d. net.). The work is a comprehensive "handbook for students preparing for the examinations of the Science and Art Department, the Royal Institute of British Architects, the Surveyors' Institution," and similar bodies; and it is "designed also as a book of reference for persons engaged in building." The volume has been revised to keep pace with advancing ideas, and it has been considerably enlarged. Over 1,200 illustrations.

ENGLISH LITERATURE.

The Foreign Debt of English Literature. By T. G. Tucker, Litt D., Professor of Classical Philology in the University of Melbourne. (6s. net. George Bell.)

Prof. Tucker intends his "unpretentious chapters" to furnish "the ordinary student, who has not yet given the matter any particular thought, a first assistance in realizing the interdependence of literatures." He takes up successively Greek, Latin, French, and Italian literature (with an intervening chapter on "Literary Currents of the Dark Ages"), outlines each of them in their main forms of expression, and traces the influences of each, direct and indirect, upon English literature. The influences of Spanish, German, Celtic, and Hebrew literature are exhibited on a much smaller scale. Nine synoptical tables, mostly devoted to the principal literatures of Europe, ancient and modern, and elaborately constructed, are most useful collateral aids. Inevitably, the matter is severely compressed, and the various summaries are but "epitomes with a special object." They are very ably presented, no doubt: but the inexorable difficulty remains, that the epitomes have a very different meaning to the reader ignorant of the literatures from what they have to the accomplished writer or to any other scholar fairly familiar with them at first hand. However, the volume will be most suggestive to sincere learners and may lead them to extend their interest to a closer acquaintance with the subjects treated. Perhaps that is about all that such a work than be reasonably expected to effect. The style is clear and simple, and the matter is handled with adequate knowledge and efficiency.

"The Shakespeare Library: The Shakespeare Classics." General Editor, Prof. I. Gollancz, Litt.D. (2s. 6d. net each. Chatto & Windus.)

This important series consists of reprints embodying the romances, novels, and plays used by Shakespeare as the direct sources and originals of his plays. We have three more volumes: (1) *The Sources and Analogues of "A Midsummer Night's Dream,"* compiled by Frank Sidgwick; (2) *The Chronicle History of King Leir*, edited by Sidney Lee, Litt.D.; and (3) *The Taming of a Shrew*, edited by F. S. Boas, M.A. Introductions, notes, and (where necessary) glossaries illustrate and explain the texts, and the relations to Shakespeare's plays are cautiously and judiciously indicated. The volumes furnish most valuable collateral matter for the study of the plays, and they are very tastefully got up.

Selections from Early American Writers, 1607–1800. Edited by William B. Cairns, Assistant Professor of American Literature in the University of Wisconsin. (5s. net. Macmillan.)

In a handy volume of about five hundred pages Prof. Cairns illustrates by typical passages in prose and in verse the course of American literature from the evergreen Captain John Smith down to Charles Brockden Brown. The historical, social, and religious events and experiences of the people give a varied and quaint colouring to the literary expression. The volume may be largely appealed to for illustration of the general history. Perhaps there is not much to learn from the style, yet it often seems very appropriate to the matter, and usually adds piquancy. A most interesting volume, compiled with great care and good judgment.

MODERN LANGUAGES.

"Omega Press Series."—(1) *Heath's Practical French Grammar.* By W. H. Fraser, B.A., and J. Squair, B.A., Professors of the Romance Department, University of Toronto. (3s. 6d.) (2) *Practical French Composition for Middle and Senior Classes.* By J. E. Mansion, B. ès L., Royal Academical Institution, Belfast. (2s.)

These are both very good books for their several purposes, but we have seen them before. They now reappear in the livery of the Omega Press, but are substantially unchanged.

Siepmann's Primary French Course, Part III. By Otto Siepmann, Head of the Modern Language Department at Clifton College. (2s. 6d. Macmillan.)

The present volume comprises a reader, questions for oral practice, exercises in grammar and composition, and test papers, with lists of words and phrases. It is the completion of a great series developed in the course of the past seven years, the guiding principle being "the coordination of conversational, grammatical, and literary teaching, with a view to establishing modern languages as one of the most complete instruments of education." The plan is excellent, and it is very thoroughly worked out. If the labour imposed upon the pupil seems arduous, it is to be remembered that the mastery of French is an exceedngly difficult task, and brings a very ample reward.

A First Book of German Oral Teaching. By A. R. Florian, M.A., formerly Demy of Magdalen College, Oxford, Assistant Master at the Manchester Grammar School. (3s. 6d. Rivingtons.)

Mr. Florian sets out forty-six passages for reading, and appends to each questions, grammatical material, and exercises. Then he gives a series of prose and verse passages for reading, without apparatus, and a series of "reproduction exercises" directly referred to the more advanced half of the first group of reading passages. The outlines of formal grammar are gathered together in a subsequent section, and vocabularies are appended. The work is thoroughly practical, and the design is worked out patiently and efficiently. It should be a strong force in the hands of a capable teacher.

L'Inglese Imparato da Sè, con la Pronuncia Fonetica. Redatto da G. Dalla Vecchia. (1s. Marlborough.)—The book follows the regular plan of the well known "Self-Taught Series"—first, classified vocabularies; next, the essential elements of grammar, with exercises (and key); then, conversations of a practical character on a vast variety of subjects. The pronunciation of the English as phonetically depicted has a weird aspect; but it will readily be understood and will be very helpful to Italian learners of English. The work is capably executed.

Messrs. Marlborough also publish a fourth edition of *French Pronunciation made Easy* by M. H. Hébert. The work has been rewritten, enlarged, and rearranged. The explanations are full and clear, and some continuous reading exercises (with key) are appended. The volume should be very serviceable to learners that are not within reach of the living French voice.

HISTORY.

An Introductory History of England. By C. R. L. Fletcher, formerly Fellow of All Souls and Magdalen Colleges, Oxford. Vols. III. and IV. (5s. each. Murray.)

Mr. Fletcher continues his work from the Restoration to the beginning of the Great War (1660–1792), and then on to the Battle of Waterloo (1815), and there he proposes to stop. The records of the past century "can hardly be accounted History, for fair judgments on such events will be impossible: we need a distance and a perspective before we can form anything approaching a fair judgment on the men and events of the Past." Mr. Fletcher himself illustrates the dictum in occasional remarks, and he does well to stop betimes, otherwise he would probably develop into a bitter pamphleteer. "With the exceptions of the Eman-

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cipation of the Catholics and the Dissenters and of the introduction of Free Trade," he writes, "I have little sympathy with any of the 'Reforms' and 'Movements' of the nineteenth century." How he would deal with Irish affairs may be gathered from his citation of Grattan's outburst—"We will avenge ourselves by sending into the ranks of your Parliament and into the very heart of your Constitution *one hundred of the greatest scoundrels in the Kingdom*"—as a remarkable example of "prophetical foresight." The words he italicizes are equally viperous and unjust. The dangers to British rule in India after 1849, he says, "would come either from tribes beyond the Himalayan frontier, from mutiny in our Native Army, or—incomparably the worst of the three—from Radicals in the British Parliament and Press." Was it the Himalayan frontier? Why was there mutiny? Is the government of any part of the Empire to be exempted from parliamentary and public inquiry and criticism? "The baleful skill with which the leaders of the [American] revolt played their cards has seldom been equalled," writes Mr. Fletcher; "the most disgusting hypocrite of the lot is perhaps Benjamin Franklin." We vainly look for the essential causes of the French Revolution; Mr. Fletcher tilts blindly at "anarchy" and "Radicalism." He no doubt seizes the outstanding points of the history and treats them in a brisk and unconventional style; but these later volumes need to be read very critically, with a lively distrust of the author's political insight and judgment.

(1) *History of Mediæval Civilization, and of Modern to the end of the Seventeenth Century.* (2) *History of Contemporary Civilization.* By Charles Seignobos, Doctor of Letters of the University of Paris. (5s. net each. Fisher Unwin.)

We have already noticed the first volume of this series, the "History of Ancient Civilization." The present volumes continue the outline on the same plan, seizing the main points and presenting them with such effectiveness as the narrow space permits. The work seems to us to improve in grasp and pointedness as it advances: these two volumes are much more satisfactory than the first, the author appearing to be upon more familiar ground. They convey in a compendious form a comprehensive and instructive impression of the varied and gradual development of the principal elements of civilization in the more advanced countries of the world. "The history of civilization," Dr. Seignobos cheerfully concludes, "should teach us to have confidence in the future."

EDUCATION.

The Law concerning Secondary and Preparatory Schools. By Alick H. H. Maclean, of the Middle Temple, Barrister-at-Law. (15s. net. Jordan.)

While dealing with all the legal aspects of secondary schools, Mr. Maclean also embodies in his work the common law and the statutes relating to schools in general, and discusses various branches of the law that frequently concern schools, though not expressly relating to them. The subjects are systematically disposed and adequately treated, though the full bearings of decisions must still, of course, be sought in the legal library. More important statutes and Board of Education regulations are placed in appendixes. The volume is an instructive repertory of legal information on the whole subject.

Législation de l'Enseignement, Primaire et Secondaire, en Angleterre. Par Frédéric Péron, Docteur en Droit, Licencié ès Lettres, Rédacteur au Ministère de l'Instruction Publique. (Paris: Henri Jouve, 15 rue Racine.)

"Il est difficile, pour comprendre et apprécier les institutions anglaises, de se servir, comme point de comparaison, des institutions françaises correspondantes." However, Dr. Péron manages to understand and to appreciate the development of our educational system (if system it is) and to explain it lucidly to his countrymen. A single summary chapter brings the story down to 1870, after which the successive Education Bills are treated in considerable detail. Dr. Péron has gone to trustworthy sources for his information. His volume forms an instructive record of what has been done and attempted, the conflicts over the more recent measures being very fully narrated.

Mrs. Ennis Richmond, Principal of West Heath School, Hampstead, sends us a number of lectures and papers on the virtues of Co-education: (1) *A Natural Education;* (2) *For Our Daughters,* a Plea for the Co-education of Our Boys and Girls; (3) *Two Aspects of the Co-education of Boys and Girls;* (4) *Public Schools and Co-education;* (5) *Why not Co-education?*—"In speaking of co-education hitherto," she says, "I have based my right to speak at all on the fact that I had been for twenty-five years closely connected with the management of boys' schools, and had brought out of that connexion the conviction not so much that co-education was right as that separate education was wrong." The system of co-education, she holds, "is necessary for the free development of boys and girls into young men and young women all through their growing years, but especially necessary between the ages of fourteen and eighteen." The discourses are well worth patient consideration.

The Board of Education has issued a new edition (1908) of Matthew Arnold's *Reports on Elementary Schools,* 1852–1882, with additional matter and appendixes, and with an introduction by F. S. Marvin, M.A., one of H.M. Inspectors of Elementary Schools (1s., Wyman). The price is merely nominal. These Reports are remarkably live, yet full of instruction and suggestion.

The Girls' School Year Book (*Public Schools*)—the fourth annual issue (2s. 6d. net, Swan Sonnenschein)—provides a record, comprehensive and concise and careful, of all matters of essential interest to parents and schoolmistresses in connexion with the secondary education of girls. Besides schools in a narrow sense, it deals with the various departments of higher instruction and future occupation suitable for women, and offers a considerable quantity of collateral information of a useful character. We hope this annual will continue to flourish.

The growing interest in education is to some extent evidenced by the fact that librarians are making special catalogues of their books and pamphlets on the subject. Thus, the Public Libraries Committee of Newcastle-upon-Tyne have issued a considerable *Education Catalogue,* digesting the educational works in their libraries in lists that render consultation as easy as possible. It is interesting and gratifying to observe the number and the variety of the works catalogued.

PRACTICAL MANUALS.

Educational Woodworking for Home and School. By Joseph C. Park, State Normal and Training School, Oswego, New York. (4s. 6d. net. Macmillan.)

The book "is intended to be used under the direction of a skilled instructor who has sufficient technical knowledge and ability to lead his pupils to become capable in this line of work." This explains the omissions of elements that might have been expected if the book had been addressed to workers without teachers. Successive Parts describe and explain (1) wood-working tools, (2) wood-working machines, (3) wood (in outlines), (4) fastening devices used in wood construction, (5) wood-finishing, and (6) wood-turning; and there are useful appendixes. Directions and exercises are given; and there are 263 figures.

School Gardening. By W. Francis Rankine. (1s. Pitman.)

Mr. Rankine explains in simple and clear language the best way to go about school gardening, and the reasons for the procedure he recommends. "Theory without practice is useless, and practice without theory is a drawback: the greatest measure of success is realized by the gardener who possesses a well balanced knowledge of both." Besides, school gardening must be done educationally, and that involves the reasons for doing this and not doing that. Mr. Rankine treats of the soil, manures, tools, seeds, vegetables and fruits, grafting, pruning, &c. An excellent little book, handy, well printed and got up, and liberally and efficiently illustrated.

Colour-Sense Training and Colour Using. By E. J. Taylor, Sharneyford Council School, Bacup. (1s. 6d. net. Blackie.)

Mr. Taylor cannot claim completeness for his little manual, but he does claim "to suggest to his colleagues in the teaching profession a rational, scientific, and highly practical method of colour-sense training from the dawn of consciousness onwards through the one and continuous process of development," and also to present to his fellow art students "in a clear, logical, and possibly attractive form such knowledge of the fundamental facts underlying the science as will enable them, if not to become great colourists, at least to avoid mistakes." He develops his subject progressively in concise and lucid form. There are seventeen coloured diagrams. A very capable and suggestive work.

Common-Sense Needlework. By Miss Jane A. Fleming, Green Lane Council School, Leeds. (3s. 6d. net. E. J. Arnold.)

Miss Fleming accentuates two points: (1) the necessity for continued motion in sewing, and (2) the application of school exercises to home work, that is to say, the art of mending or repairing. She finds that, under her system, "girls (*a*) love sewing, (*b*) can mend sensibly, and (*c*) have in many cases got a desire for garments made by their own hands." This is good hearing, and should be made a note of. The explanations of the ordinary branches of needlework are ample and clear; miscellaneous exercises are proposed; ornamental work is exhibited, as well as the processes of repairing, and "suggestions" for preparing sewing lessons added. A graduated syllabus of needlework, readily adaptable to any school or class, and embodying all the exercises in the "suggestions," will be found very helpful. There are 183 illustrations, and the work is admirably printed and got up. An exceptionally able and common-sensible work.

RELIGIOUS AND MORAL.

"Cambridge Bible for Schools and Colleges."—(1) *The Two Books of the Kings.* Edited by William Emery Barnes, D.D., Fellow and Chaplain of Peterhouse, Hulsean Professor of Divinity, Examining Chaplain to the Bishop of London. (3s. 6d. net.) (2) *The Book of Esther.* Edited by the Rev. A. W. Streane, D.D., Fellow of Corpus Christi College, Cambridge. (1s. 6d. net.) (Cambridge University Press.)

Both volumes are admirably edited. The introductions and notes judiciously select such points as are suitable for the stages of study contemplated, and the scholarship is of the first quality.

"Cambridge Greek Testament for Schools and Colleges."—*The Epistles of Paul the Apostle to the Colossians and to Philemon.* Edited by A. Lukyn Williams, B.D., Vicar of Guilden Morden and Examining Chaplain to the Lord Bishop of Durham. (3s. Cambridge University Press.)

On nine pages of Greek text Mr. Williams writes sixty-six pages of introduction and 191 pages of notes—an exhaustive treatment of a

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tolerably difficult subject, very suitable for reference or for detailed private study, but rather disproportioned for school, if not also for college, use. The introductions offer an ample and scholarly treatment of all important points, and the notes, exegetical and grammatical, are exceptionally thorough.

Sermons, Doctrinal, Philosophical, Critical, and Educational. By the Rev. Joseph Miller, B.D. First Series. (5s. Rivingtons.)

Mr. Miller has already given proof of his scholarship and laboriousness in the four volumes of his comprehensive "Historical and Speculative Exposition of the Thirty-nine Articles." The present volume contains thirty-three sermons—thoughtful, suggestive, and earnest—on a wide range of subjects. The style is somewhat heavy, though probably lightened by the arts of delivery. Ten of the sermons are taken from, or suggested by, German or French writings.

HINTS FOR THE HOLIDAYS.

Holidays Abroad is a charmingly illustrated booklet describing concisely a series of tours in less known districts of Holland, North Germany, the side valleys of the Rhine, the Belgian Ardennes, and the Tyrol, easily and inexpensively reached by the Great Eastern Railway Company's Harwich route to the Continent.

"The Syndicate of Initiative" for Calvados (10 rue de Bernières, Caen) are circulating a booklet of *Rambles through Normandy*, and "will be happy enough if they may be of any use by guiding you in the visit round one of the finest French departments." The booklet offers attractive itineraries, with numerous illustrations.

A very full illustrated pamphlet on "*French Holiday Courses by the Seaside*, organized under the patronage of the Alliance Française and with the approbation of the Rector of the University of Caen," is likely to attract students of French to Villerville (near Trouville) for holiday studies. Inquiries should be addressed to the Director of the Courses, Prof. L. Bascan, Directeur, Ecole Supérieure, Rambouillet (S.-et-O.).

The Art Publishing Company (Norfolk Street, Strand, W.C.) sends us a seductive booklet published by the Paris-Orléans Railway Company, describing the historic and romantic parts of France served by this railway — Touraine, Auvergne, Brittany, the Pyrénées, &c. A very interesting chapter on the primitive methods of travel in France is appended. The illustrations are numerous and excellent. Holiday-makers in these parts may obtain all necessary information from the Administration of the Paris-Orléans Railway Company, 1 Place Valhubert, Paris (Bureau du Trafic-Voyageurs).

FIRST GLANCES.

Science.

Chemistry, Physical Exercises in. By Dr. W. A. Roth, a.o. Professor of Physical Chemistry in Greifswald. Authorized Translation by A. T. Cameron, M.A., B.Sc. 6s. net. Constable.

[Elementary; "connects training experimental method with the conclusions derived from the results." Revised throughout by the author, who has also made numerous additions. Forty-nine diagrams. Most useful.]

Elementary Practical Science, Notes of Lessons on. By Robert Bunting, Head Master of the "Acland" Higher Elementary School, London, N.W. 3s. 6d. Pitman.

[To devolop faculty of observation; "enormous number of experiments" (652); 11 figures. Evidently based on large and thoughtful experience. Extremely serviceable.]

Elementary Science for the Certificate Examinations: Introductory Section. Edited by William Briggs, LL.D., M.A., B.Sc., F.C.S., Principal of the University Correspondence College. 2s. 6d. Clive.

[Course of Elementary Physics in Chemistry, practical and theoretical. Able exposition; simple and suitable experiments; abundant exercises (with answers).]

Elementary Science, A Teacher's Course of. Part I.: Physics and Chemistry. By Frank Belton, B.Sc. 3s. 6d. Pitman.

[For the Preliminary Certificate and the Certificate Examinations. Full and careful exposition; numerous questions and exercises appended; 228 figures.]

Mechanics, Elementary. By C. M. Jessop, M.A., formerly Fellow of Clare College, Cambridge, Professor of Mathematics in Armstrong College, Newcastle-on-Tyne, and T. H. Havelock, M.A., D.Sc., Fellow of St. John's College, Cambridge, Lecturer in Applied Mathematics in Armstrong College. 4s. 6d. George Bell.

[Dynamics and statics. Based on part of Prof. Jessop's "The Elements of Applied Mathematics," which has been rearranged, largely rewritten, and somewhat enlarged by Dr. Havelock. Numerous exercises (with answers); 178 figures. Able treatment.]

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Bell's Literature Readers.—(1) Fights for the Flag (Fitchett). (2) Deeds that won the Empire (Fitchett). (3) The Little Duke (Miss Yonge). 1s. each. George Bell.

Blackie's English Classics.—(1) Adonais (Shelley). 2d. (2) The Palace of Art, and Ulysses (Tennyson). 2d. (3) A Dream of Fair Women, and Tithonus (Tennyson). 2d. (4) Childe Harold's Pilgrimage, Canto IV. (Byron). 6d. All edited by David Frew, B.A., with judicious notes.

Dent's The Temple Continuous Readers (edited by Clifford Dent).—(1) Rollo at Work, and Rollo at Play (Jacob Abbott). (2) Gulliver's Travels (Swift). (3) The Heroes (C. Kingsley). (4) Grimm's Fairy Tales. (5) The Story of Drake (edited by M. T. Yates, LL.D.). 6d. each. Illustrated.

Longmans' Class-Books of English Literature.—(1) Tales of Troy, by Andrew Lang, with six illustrations by H. J. Ford and a map. (2) Tales of the Greek Seas, by Andrew Lang, with seven illustrations by H. J. Ford. (3) Selections from "Short Studies on Great Subjects" (Froude), with introduction and notes by J. Thornton, M.A.

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[Excellent representative selections.]

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Oxford (Clarendon Press) Select English Classics (edited by Q.).—(1) Charles Lamb—Selected Essays. 3d. (paper). (2) Scenes from Marlowe's Plays. 4d. (cloth).

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Stead's The Penny Poets.—(1) Longfellow's Evangeline. (2) Longfellow's Shorter Poems. Edited by R. S. Wood.

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Dent's Les Classiques Français (edited by H. Warner Allen).—Julie; ou, La Nouvelle Héloïse (Rousseau). Edition abrégée, avec Préface de Frank A. Hedgcock. 1s. 6d. net.

[Judiciously abridged; good introduction. Portrait.]

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Oxford Modern French Series (edited by Leon Delbos, M.A.)—Jeanne d'Arc (Michelet). Edited by J. H. Sacret, M.A. Oxon., Lecturer in History, University College, Reading. 2s. Clarendon Press.

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[A very helpful collection, well chosen.]

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[German notes, Fragen, Grammatisches, galore.]

EDUCATION.

Agricultural and Dairy College, The Midland. Reports on Experiments with Crops and Stock carried out at the College Farm and in the contributing counties, 1908–9.

Agriculture and Fisheries, Board of.—Various practical leaflets.

Baroda State: Report on Public Instruction in the Kadi District, from the commencement till the year ending July, 1908. By Chhaganlal Thakurday Modi, B.A., Educational Inspector, Kadi District.

Board of Education. (1) Regulations for the Training of Teachers for Secondary Schools. Cd. 4753. 1d. (2) Code of Regulations for Public Elementary Schools in England. Cd. 4735. 3d. (3) Educational Pamphlets. No. 17: Report on Science Teaching in Public Schools represented on the Association of Public-School Science Masters. 4d. (4) Regulations for Technical Schools, Schools of Art, &c., in England and Wales. Cd. 4736. 2d. (5) Regulations for the Training of Teachers for Elementary Schools. Cd. 4737. 7d. Wyman.

Cambridge Higher Local Examinations: Examination Papers in June, 1909, with Regulations for Examinations in December, 1909, and June, 1910. 2s. Also the Regulations separately. Cambridge Local Examinations: (1) Regulations for July and December, 1910: (2) Schedules for Scientific subjects; (3) Regulations for Examinations for School Certificates and Army Leaving Certificates, 1910; (4) Statistical Tables of July Examination, 1909. Cambridge University Press.

City and Guilds of London Institute. Department of Technology: Programme for Session 1909–10. 9d. net. Murray.

Dentists' (School) Society, Transactions of (Vol. 3, No. 6): Inaugural Address by R. Denison Pedley, President. 6d. Segg, Regent Street, W.

English Association, The. (1) Bulletin, No. 8. (2) Leaflet, No. 12, Summary of Examinations in English affecting Schools.

L.C.C. (1) Report on Industrial and Special Schools for year ended March 31, 1908. 9d. (2) Report on Higher Education. 4d. (3) Report on Open-Air Schools, 1908. 6d. (4) Report of the Medical Officer (Education) for the twenty-one months ended December 31, 1908. 2s. (5) Report on the Medical Treatment of Children attending Elementary Schools. King.

Matriculation Directory, No. 52, June, 1909; with articles on Textbooks. 1s. net. Clive (University Tutorial Series).

Moral Education: The Task of the Teacher, by Prof. J. S. Mackenzie; The Training of the Teacher, by Millicent Mackenzie. In one pamphlet.

[Reprint from the *International Journal of Ethics* for July, 1909. Probably the most adequate statement of the case of the Moral Education League.]

National Union of Teachers. Report for 1909.

New York City, Students' Aid Committee of the High School Teachers' Association of: Report.

Ontario, Province of. Report of the Minister of Education for 1908.

Peace upon the Seas, The Path to. By Andrew Carnegie. Reprinted from the *Times* of June 19, 1909, with slight revision. The Peace Society, 47 New Broad Street, E.C.

Secondary School-Boys' Camp. New Prospectus. Apply to Hon. Warden, Toynbee Hall, London, or the University Settlement, Manchester.

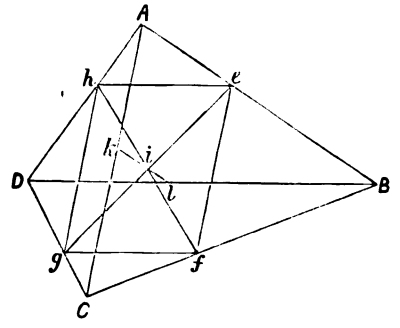
MATHEMATICS.

11604. (J. TATE, M.A.)—The sides AB, BC, CD, DA of a spherical quadrilateral formed by arcs of great circles are divided internally at E, F, G, H respectively so that

$$\sin AE \sin BE = \sin CF \sin BF = \sin CG \sin DG = \sin AH \sin DH = \lambda.$$

Prove that the arcs EG, FH intersect in a point I lying on the arc KL, where K and L are the middle points of the diagonals, and that, if the diagonals be equal, $\sin KI \sin LI = \lambda$.

Solution by M. T. NARANIENGAR, M.A.



This follows from the property of the *spherical mean centre*. It may also be proved thus: — Let small letters denote the projections of capital letters on the corresponding chords.

Then

$Ae/eB = \sin AE/\sin EB = \lambda$, &c. [since OAB is isosceles].

Also $Ak/kC = Dl/lB = 1$.

Now, in the tetrahedron ABCD, it is readily seen that *efgh* is a parallelogram, and that its centre lies on *kl*.

[This may be statically inferred by imagining masses 1, λ, 1, λ at A, B, C, D respectively, whose centre is in *kl*, *eg*, and *hf*.]

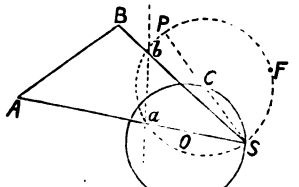
Thus, the point I lies on KL.

Again, if the diagonals AC and BD of the spherical quadrilateral be equal, $Ok = Ol$; therefore, as before,

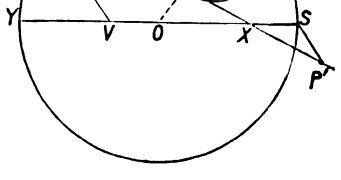
$$\sin KI/\sin LI = ki/li = \lambda.$$

14609. (R. C. ARCHIBALD, M.A.)—Prove the following relations between the cardioide and the three-cusped hypocycloid or tricuspide:—(i.) The envelope of the parabolas, with foci on a cardioide and always tangent to two fixed lines drawn at pleasure through its cusp is a tricuspide. (ii.) A cusp S of a tricuspide and its opposite vertex V are joined. Any tangent to the tricuspide intersects this line SV in X. With centre V and radius VX, a circle is described which cuts the tangent again in P. The locus of P is a cardioide.

Solution by C. E. YOUNGMAN, M.A.



(i.) Let the circle (O) be the base of the cardioide, S the cusp, and SA, SB the two fixed lines; A and B being so determined that the mid-points of SA and SB lie on (O). Consider two consecutive parabolas: they must have a third common tangent, *ab* suppose, cutting SA, SB at *a* and *b*; and the circle S*ab* will go through their foci FF′, *i.e.*, will touch the tangent to the cardioide at F; hence its centre C will lie on (O). Draw the diameter SCP; then P is concyclic with SAB, and *a*, *b* are its projections on SA, SB; but the parabolas have the same envelope as their common tangent *ab*, the pedal line of P in SAB, and this envelope is by Ferrers's theorem a tricusp circumscribing the nine-point circle of SAB.



(ii.) Let D be the point of contact of the fixed and rolling circles of the tricusp, $OS = 3a$, and $SOD = \theta$. Then we know that the tangent PQX makes $\angle PXO = \frac{1}{2}\theta$, and

$$OX = a \sin \tfrac{3}{2}\theta \sin \tfrac{1}{2}\theta = a(2\cos\theta + 1);$$

therefore

$$VP (= VX) = 2a(1 + \cos\theta);$$

and angle $PVY = \theta$; therefore P describes a cardioide with cusp V.

Similarly, if we take P′ on the tangent so that $SP' = SX = 4a - VX = 2a(1 - \cos\theta)$, P′ describes a cardioide having cusp S and vertex V; equal to the other one.

It is easily shown that $QX = XP'$.

15956. (W. W. ROUSE BALL.)—The Proposer desires to restate the question (*cf. Educational Times*, for March, 1906) as follows:—In 1850

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Mr. Kirkman proposed as a problem the determination of 7 arrangements of 15 schoolgirls, each arrangement consisting of 5 sets of triplets, so that no two girls will occur together in any triplet more than once. The question was discussed by numerous mathematicians, notably by the author, Cayley, and Sylvester, and several solutions have been given. The generalized problem consists in finding $\frac{1}{2}(3m-1)$ arrangements of $3m$ things, each arrangement consisting of m sets of triplets, so that no two things will occur together in any triplet more than once. This has been solved for various values of m, in particular when $m = 1, 3, 5, 7, 9, 13, 15$. It seems probable that there is a solution when $m = 11$. Can any readers of *The Educational Times* give the solution when $m = 11$?

Solution by HENRY E. DUDENEY.

(*Continued.*)

Referring to my previous articles on this problem (see *Educational Times*, June, 1908, and *Reprint*, New Series, Vol. XIV., pp. 97, &c., and Vol. XV., pp. 17, &c.) readers will doubtless be interested to know that I have at last succeeded in solving it generally for n schoolgirls, where n is of the form $6m+3$. For any such number of girls a solution is always possible, and the reason why the problem has baffled mathematicians for sixty years is simply this: we have all been trying to generalize from the entirely exceptional case, 15! The new pose that I exhibited in my last article for the case of 21 girls, far from being peculiar to that number, actually turns out to be the regular pose in which an arrangement for any number may be given, with the solitary exception of 15 girls! The reason why it will not work for 15 is that the number is too small to admit of the triplets being posed in the manner required by a number of its particular form. It is, of course, not surprising to find that the general pose is frequently not the simplest one for a particular number, but I will deal with that point later. At present I want to show that a solution may always be found in this particular pose whether the other methods break down or not—with that one exception of 15 girls.

The general law is briefly this. The girls may always be divided into the three sets, a, b, and c, each with suffixes 1, 2, 3, ..., $\frac{1}{3}n$ and the pose will always be in this form:—$\frac{1}{3}n$ days produced cyclically from a single day; and $\frac{1}{2}(n-3)$ days all distinct, but the successive triplets on any day produced cyclically from a single triplet. A reference to my solution for 21 girls will make this perfectly clear. The following are my solutions for 9 and 27 girls respectively, posed in this general manner.

9 SCHOOLGIRLS.

1st day ... $a_1\ b_2\ a_3 \mid b_1\ c_2\ b_3 \mid c_1\ a_2\ c_3$

4th day ... $a_1\ b_1\ c_1 \mid a_2\ b_2\ c_2 \mid a_3\ b_3\ c_3$

27 SCHOOLGIRLS.

1st day ... $a_8\ a_7\ a_5 \mid b_2\ b_3\ b_5 \mid c_5\ c_7\ c_1 \mid a_4\ b_8\ a_9 \mid b_1\ c_4\ b_6 \mid c_6\ a_2\ c_9 \mid a_1\ b_4\ c_3 \mid a_3\ b_9\ c_6 \mid a_6\ b_7\ c_2$

10th day ... $a_1\ b_1\ c_1 \mid a_2\ b_2\ c_2 \mid a_3\ b_3\ c_3 \mid a_4\ b_4\ c_4 \mid a_5\ b_5\ c_5 \mid a_6\ b_6\ c_6 \mid a_7\ b_7\ c_7 \mid a_8\ b_8\ c_8 \mid a_9\ b_9\ c_9$

11th day ... $a_1\ b_8\ c_9 \mid a_2\ b_9\ c_1 \mid a_3\ b_1\ c_2 \mid a_4\ b_2\ c_3 \mid a_5\ b_3\ c_4 \mid a_6\ b_4\ c_5 \mid a_7\ b_5\ c_6 \mid a_8\ b_6\ c_7 \mid a_9\ b_7\ c_8$

12th day ... $a_1\ b_6\ c_2 \mid a_2\ b_7\ c_3 \mid a_3\ b_8\ c_4 \mid a_4\ b_9\ c_5 \mid a_5\ b_1\ c_6 \mid a_6\ b_2\ c_7 \mid a_7\ b_3\ c_8 \mid a_8\ b_4\ c_9 \mid a_9\ b_5\ c_1$

13th day ... $a_1\ b_3\ c_5 \mid a_2\ b_4\ c_6 \mid a_3\ b_5\ c_7 \mid a_4\ b_6\ c_8 \mid a_5\ b_7\ c_9 \mid a_6\ b_8\ c_1 \mid a_7\ b_9\ c_2 \mid a_8\ b_1\ c_3 \mid a_9\ b_2\ c_4$

It will be seen that the first day will always produce, by cyclical permutation of the suffixes, $\frac{1}{3}n$ days in all. The other days will obviously simply repeat themselves. Now, although the pose of the lines for the days is constant, the actual formation of the triplets will depend on whether n is of the form $18q+3$, $18q+9$, or $18q+15$. We will call these the "first," "second," and "third" types, and remember that in the third type q must be an integer, in order to exclude the case of 15. An example of the first type is 21 and a reference to it will show that on the first day every triplet contains a, b and c except the three, aaa, bbb, and ccc. In the next example of this first type, 39, every triplet will be abc, except aaa (twice), bbb (twice), and ccc (twice). In the case of 57 every group will be abc, except aaa (thrice), bbb (thrice), and ccc (thrice). And so on. In the second type, of which the above 9 and 27 are examples, we always get on the first day the three triplets aba, bcb, and cac (never more than once), with the aaa, ..., increasing in number as we advance, as before. Thus 45 will consist of aaa, ... (twice), aba, ... (once), and the remaining groups abc. I will now give my solution for the case of 69, which is of the third type.

69 SCHOOLGIRLS.*

1st day ... $a_7\ b_{14}\ a_{13} \mid b_{20}\ c_2\ b_{16} \mid c_{10}\ a_{21}\ c_8 \mid b_{13}\ a_{23}\ b_{15} \mid c_5\ b_{11}\ c_{22} \mid a_{11}\ c_{18}\ a_{15} \mid a_5\ a_4\ a_{18} \mid a_{10}\ a_8\ a_3 \mid a_{17}\ a_{14}\ a_6 \mid b_{10}\ b_7\ b_{21} \mid b_{22}\ b_{17}\ b_9 \mid b_{18}\ b_{19}\ b_2 \mid c_4\ c_3\ c_{17} \mid c_{12}\ c_{16}\ c_{23} \mid c_{11}\ c_{14}\ c_{19} \mid a_{20}\ b_6\ c_{21} \mid a_1\ b_5\ c_9 \mid a_2\ b_1\ c_{20} \mid a_9\ b_{12}\ c_{15} \mid a_{22}\ b_4\ c_1 \mid a_{16}\ b_3\ c_{13} \mid a_{12}\ b_{23}\ c_6 \mid a_{19}\ b_8\ c_7 \mid$

24th day ... $a_1\ b_1\ c_1 \mid a_2\ b_2\ c_2 \mid a_3\ b_3\ c_3 \mid$, ..., ...,

25th day ... $a_1\ b_3\ c_{15} \mid a_2\ b_4\ c_{16} \mid a_3\ b_5\ c_{17} \mid$, ..., ...,

26th day ... $a_1\ b_{21}\ c_5 \mid a_2\ b_{22}\ c_6 \mid a_3\ b_{23}\ c_7 \mid$, ..., ...,

27th day ... $a_1\ b_7\ c_{20} \mid a_2\ b_8\ c_{21} \mid a_3\ b_9\ c_{22} \mid$, ..., ...,

28th day ... $a_1\ b_{18}\ c_{16} \mid a_2\ b_{19}\ c_{17} \mid a_3\ b_{20}\ c_{18} \mid$, ..., ...,

29th day ... $a_1\ b_{22}\ c_{23} \mid a_2\ b_{23}\ c_1 \mid a_3\ b_1\ c_2 \mid$, ..., ...,

30th day ... $a_1\ b_{19}\ c_{14} \mid a_2\ b_{20}\ c_{15} \mid a_3\ b_{21}\ c_{16} \mid$, ..., ...,

31st day ... $a_1\ b_{17}\ c_{10} \mid a_2\ b_{18}\ c_{11} \mid a_3\ b_{19}\ c_{12} \mid$, ..., ...,

32nd day ... $a_1\ b_9\ c_{17} \mid a_2\ b_{10}\ c_{18} \mid a_3\ b_{11}\ c_{19} \mid$, ..., ...,

33rd day ... $a_1\ b_{15}\ c_6 \mid a_2\ b_{16}\ c_7 \mid a_3\ b_{17}\ c_8 \mid$, ..., ...,

34th day ... $a_1\ b_{20}\ c_{22} \mid a_2\ b_{21}\ c_{23} \mid a_3\ b_{22}\ c_1 \mid$, ..., ...

In cases of this type we shall get on the first day that set of six triplets aba, bcb, cac, bab, cbc, aca (never more than once), together with the aaa, ... (increasing in number as we advance, as in the other types) and the remainder of the triplets of the form abc. Now it will be seen why 15 is an exceptional case. To solve it by the general method that set of six triplets must occur, but it obviously cannot do so since it involves 18 girls, and we have only 15 to walk out together.

[Rest in *Reprint*.]

9442. (ARTEMAS MARTIN, LL.D.)—A point is taken at random in the surface of a given triangle; find the average area of the triangle cut off by a line passing through the random point.

Note by D. BIDDLE.

Dr. Artemas Martin's Question 9442 does not seem to me to be adequately solved on p. 291 (see *The Educational Times* for July 1st, 1909; see also *Reprint*, Vol. XVII., New Series, p. 17), since the Solver has assumed that the join of two random points on the *perimeter* is equivalent to a line drawn at random through a point selected at random on the *surface* of the triangle. Coordinates, x on the base, y perpendicular thereto from the points in order, and then θ ranging from 0 to π, should be used for all possible directions of the random line through each such point, and for finding the area of the triangle cut off. Then, x and y having their obvious limits, integration does the rest. Taking the centroid of the given triangle as its representative point, no straight line drawn through that point cuts off less than four-ninths or more than a half of the triangle, in triangular form. But I do not say that this is indicative of the answer.

11580. (Professor SYLVESTER.)—Prove that the norm of the 8-valued function $1+[f+(f^2-1)^{\frac{1}{2}}]\,[g+(g^2-1)^{\frac{1}{2}}]\,[h+(h^2-1)^{\frac{1}{2}}]$ is sixteen times the square of the discriminant of $x^2+y^2+z^2+2fyz+2gzx+2hxy$.

Solution by T. MUIR, LL.D.

The statement of Sylvester's unproved theorem is not quite accurate: the ternary quadric referred to should be

$$x^2+y^2+z^2-2fyz-2gzx-2hxy.$$

Putting $1+[f+(f^2-1)^{\frac{1}{2}}]\,[g+(g^2-1)^{\frac{1}{2}}]\,[h+(h^2-1)^{\frac{1}{2}}]=0$,

we have $[g+(g^2-1)^{\frac{1}{2}}]\,[h+(h^2-1)^{\frac{1}{2}}]=-f+(f^2-1)^{\frac{1}{2}}$,

whence $f+gh+g(h^2-1)^{\frac{1}{2}}+h(g^2-1)^{\frac{1}{2}}+(g^2-1)^{\frac{1}{2}}(h^2-1)^{\frac{1}{2}}=(f^2-1)^{\frac{1}{2}}$.

Squaring both sides of this, we obtain an equation of the form

$$2w+2x(g^2-1)^{\frac{1}{2}}+2y(h^2-1)^{\frac{1}{2}}+2z(g^2-1)^{\frac{1}{2}}(h^2-1)^{\frac{1}{2}}=0 \quad \ldots\ldots\ (\alpha),$$

where $w, x, y, z = gh\mathrm{P}+\gamma^2\theta^2,\quad h\mathrm{P}+g\theta^2,\quad g\mathrm{P}-h\gamma^2,\quad \mathrm{P}+gh,$

if we put γ, θ, P for $(g^2-1)^{\frac{1}{2}}$, $(h^2-1)^{\frac{1}{2}}$, $f+gh$. From this equation (α) by multiplying by $(g^2-1)^{\frac{1}{2}}$, $(h^2-1)^{\frac{1}{2}}$, $(g^2-1)^{\frac{1}{2}}(h^2-1)^{\frac{1}{2}}$ we obtain three like equations, and, eliminating the radicals from the set of four, we find

$$2^4 \begin{vmatrix} w & x & y & z \\ x\gamma^2 & w & z\gamma^2 & y \\ y\theta^2 & z\theta^2 & w & x \\ z\gamma\,\theta^2 & y\theta^2 & x\gamma^2 & w \end{vmatrix} = 0,$$

the determinant in which can be shown to be equal to

$$\begin{vmatrix} 1 & -h & -g \\ -h & 1 & -f \\ -g & -f & 1 \end{vmatrix}^2.$$

It is of interest to note that the four-line determinant above mentioned is resolvable into a product of squares even when γ, θ, P are any quantities whatever. To see this, perform the operations

$$\mathrm{col}_1 - gh\,\mathrm{col}_4,\quad \mathrm{col}_2 - h\,\mathrm{col}_4,\quad \mathrm{col}_3 - g\,\mathrm{col}_4,$$

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* The problem for the cases of 69 and 93 girls is solved by Mr. O. Eckenstein on pp. 76 and 77 of *Reprint*, New Series, Vol. XVI., and his solutions for the cases of 57 and 75 girls immediately follow the present article.—EDITOR.

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remove the factors θ^2-h^2, γ^2-g^2; perform the operation $\text{ro}\,w_4-\text{P}\,\text{row}_1$; remove the factor $\gamma^2\theta^2-\text{P}^2$; on the three-line determinant now reached perform the operation

$$\text{col}_1+g(h^2-\theta^2)\,\text{col}_2+h(g^2-\gamma^2)\,\text{col}_3,$$

and remove the remaining factors θ^2-h^2, γ^2-g^2, $\gamma^2\theta^2-\text{P}^2$. The result is thus found to be $(\theta^2-h^2)^2(\gamma^2-g^2)^2(\gamma^2\theta^2-\text{P}^2)^2$.

When θ, γ, P have the special values $(h^2-1)^{\frac{1}{2}}$, $(g^2-1)^{\frac{1}{2}}$, $f+gh$, this becomes $1.1.[g^2h^2-g^2-h^2+1-(f+gh)^2]^2$,

i.e., $(1-2fgh-f^2-g^2-h^2)^2$,

as before.

16387. (James Blaikie, M.A.)—ABCD is a tetrahedron in which all the edges are tangents to the same sphere meeting it at the points L, M, N, P, Q, R on BC, CA, AB, DA, DB, DC; prove that

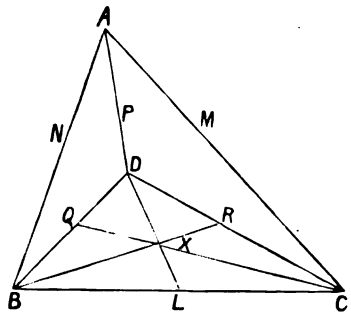
(1) $AB+CD=AC+BD=AD+BC$,

(2) LP, MQ, NR are concurrent.

Solutions (I.) *by* S. T. Shovelton, M.A.; (II.) *by* V. Madhavarao, M.A., Jagat Chandra Pal, *and* M. T. Naraniengar, M.A.; (III.) *by* M. S. Venkataranga Aiyar.

(I.) 1. Since the points of contact of the edges with the sphere are also the points of contact of the inscribed circles of the various triangles, we have

$$\begin{aligned}AD+BC&=AP+PD+BL+LC\\&=AN+DR+CR+BN\\&=AB+CD.\end{aligned}$$



2. The lines DL, BR, CQ are concurrent. Let their point of intersection be X, and let Y, Z, W be the corresponding points in the faces opposite B, C and D respectively.

Then the plane ADL contains the lines AX, DW and PL,

,,	ABR	,,	AX, BY and NR,
,,	ACQ	,,	AX, CZ and MQ,
,,	BCP	,,	BY, CZ and PL,
,,	CDN	,,	CZ, DW and NR,
,,	DBM	,,	DW, BY and MQ.

Therefore each of the lines AX, BY, CZ and DW meets the other three and they are therefore concurrent.

Further, each of the lines PL, MQ, NR meets each of the lines AX, BY, CZ, DW; and, since these lines are not co-planar, it follows that the seven lines are concurrent.

It would appear that the proposition as set by the Proposer is a special case of a larger theorem which might be stated as follows:—"If points P, Q, R, L, M, and N be taken on the edges DA, DB, DC, BC, CA and AB of a tetrahedron such that in each face of the tetrahedron the lines joining the vertices to the points on the opposite sides are concurrent, then the lines AX, BY, CZ, DW, PL, MQ, NR are concurrent, X, Y, Z, W being the points of concurrence of the lines in the faces opposite A, B, C, and D respectively."

It is interesting to notice that the lines BC, MN, QR, YZ are concurrent and similarly for the other edges. These six points of concurrence lie by threes on four straight lines in a plane, and this plane is the polar plane of the intersection of PL, MQ, NR with respect to any conicoid passing through P, Q, R, L, M, and N.

(II.) (1) follows from the relations

$AM=AN=AP$, $BN=BL=BQ$, $CL=CM=CR$, $DP=DQ=DR$.

To prove (2), let particles be placed at A, B, C, D, whose masses are inversely as the lengths of the tangents from the points to the sphere. Then the C.M. of the particles at A and D is P, and the C.M. of those at B, C is L. The C.M. of the four particles is on PL. Similarly it is on QM, and on RN. Therefore the C.M. of the four particles is the point of concurrence. [Rest in *Reprint*.]

16628. (Professor Cochez.) — α, β, γ étant les racines de $x^3+px+q=0$, calculer

$$(\alpha^2-\beta^2)(\alpha^2-\gamma^2)+(\beta^2-\alpha^2)(\beta^2-\gamma^2)+(\gamma^2-\alpha^2)(\gamma^2-\beta^2).$$

Solutions (I.) *by* W. Austin Sleigh, B.A.: *and* T. K. Venkataraman, M.A.; (II.) *by* Edith J. D. Morrison, M.A.; (III.) *by* C. M. Ross.

(I.) The given expression

$$\begin{aligned}&=\Sigma\alpha^4-\Sigma\beta^2\gamma^2=(\Sigma\alpha^2)^2-3\Sigma\beta^2\gamma^2\\&=\{(\Sigma\alpha)^2-2\Sigma\beta\gamma\}^2-3\{(\Sigma\beta\gamma)^2-2\alpha\beta\gamma(\Sigma\alpha)\}=4p^2-3p^2=p^2.\end{aligned}$$

(II.) α, β, γ being roots of $x^3+px+q=0$, to calculate $\Sigma(\alpha^2-\beta^2)(\alpha^2-\gamma^2)$,

$$\begin{aligned}\Sigma(\alpha^2-\beta^2)(\alpha^2-\gamma^2)&=\Sigma\alpha^4-\Sigma(\beta^2+\gamma^2)\alpha^2+\Sigma\beta^2\gamma^2\\&=2s_4-(s_2)^2+(\Sigma\beta\gamma)^2-2\alpha\beta\gamma(\Sigma\alpha)\\&=-2ps_2-s_2^2+p^2\quad\text{(by Newton's theorem)}\\&=4p^2-4p^2+p^2\qquad,,\qquad,,\\&=p^2.\end{aligned}$$

(III.) Since α, β, γ are the roots of $x^3+px+q=0$, then

$$\alpha+\beta+\gamma=0,\quad \alpha\beta+\beta\gamma+\gamma\alpha=p,\quad \alpha\beta\gamma=q\ \ldots\ldots\ (1, 2, 3),$$

From (1), $\alpha+\beta=-\gamma$;

therefore $\alpha^2-\beta^2=-\gamma(\alpha-\beta)$ and $\alpha^2-\gamma^2=-\beta(\alpha-\gamma)$.

Hence

$$\begin{aligned}\Sigma(\alpha^2-\beta^2)(\alpha^2-\gamma^2)&=\Sigma\beta\gamma(\alpha-\beta)(\alpha-\gamma)\\&=\Sigma\beta\gamma[\alpha^2-\alpha(\beta+\gamma)+\beta\gamma]=\Sigma\beta\gamma[2\alpha^2+\beta\gamma]\\&=2\alpha\beta\gamma\Sigma\alpha+\Sigma\beta^2\gamma^2=2\alpha\beta\gamma\Sigma\alpha+\{\Sigma\beta\gamma\}^2-2\alpha\beta\gamma\Sigma\alpha\\&=\{\Sigma\beta\gamma\}^2=p^2.\end{aligned}$$

11584. (Professor Hudson, M.A.)—Assuming that a mass of liquid contained in a vertical cylinder can rotate about the axis of the cylinder, under the action of gravity only, in such a manner that the velocity at any point of the liquid varies inversely as the angular velocity of its distance from the axis of the cylinder, find the form and position of the free surface.

Solution by R. Gardner.

Let ω be angular velocity of a point distant x from the axis; then ωx is the linear velocity of the point; but, by the given condition, the linear velocity is a/ω, a being a constant; therefore

$$\omega^2x=a\ \ldots\ldots\ (1).$$

The equation to the plane curve whose revolution generates the free surface of the liquid is known to be

$$gy=\int\omega^2x.dx\ \ldots\ldots\ (2).$$

Hence, by (1) and (2), we have $gy=ax$, a linear equation.

The surface is therefore conical, and, if r is the radius of the cylinder, the vertex of the cone is at a distance $2ar/3g$ below the surface of the liquid when at rest.

16436. (M. S. Narayana, M.A.)—In any triangle (1) from the formula $b^2\sin 2C+c^2\sin 2B=2bc\sin A$, deduce that

$$\cos\tfrac{1}{2}B+\cos\tfrac{1}{2}C-\cos\tfrac{1}{2}A=4\cos\tfrac{1}{4}(\pi-A)\sin\tfrac{1}{4}(\pi-B)\sin\tfrac{1}{4}(\pi-C);$$

(2) prove that

$$(b\cos^2B+c\cos^2C)\cot 2(B+C)=(b\cos^2B-c\cos^2C)\cot 2(B-C).$$

Solution by W. Austin Sleigh, B.A.

(1) $$\begin{aligned}&\cos\tfrac{1}{2}B+\cos\tfrac{1}{2}C-\cos\tfrac{1}{2}A\\&=2\cos\tfrac{1}{4}(B+C)\cos\tfrac{1}{4}(B-C)-\sin\tfrac{1}{4}(B+C)\\&=2\cos\tfrac{1}{4}(B+C)[\cos\tfrac{1}{4}(B-C)-\sin\tfrac{1}{4}(B+C)]\\&=4\cos\tfrac{1}{4}(\pi-A)\sin\tfrac{1}{4}(\pi-B)\sin\tfrac{1}{4}(\pi-C)\end{aligned}$$

on simplification.

(2) Writing the question in the form of a fraction; then, by componendo and dividendo, on reduction, we have

$$\cos B\cos 2C=\cos 2B\cos C;$$

i.e., $(\cos B-\cos C)(2\cos B\cos C-1)=0$;

therefore $\cos B=\cos C$ or $\cos B\cos C=\frac{1}{2}$.

But $\cos B\cos C\neq\frac{1}{2}$; therefore $\cos B=\cos C$; therefore $B=\pm C$.

But $B\neq -C$; therefore $B=C$; *i.e.*, $A+2B=180$

is the condition necessary for question to be correct.

16623. (G. N. Watson, B.A.)—Prove that

$$1+\sum_{n=1}^{\infty}\left\{\frac{1.3.5\ldots(2n-1)}{2.4.6\ldots(2n)}\right\}^3=\{\Gamma(\tfrac{1}{4})\}^4/4\pi^2,$$

where Γ denotes Euler's gamma-function.

Solution by the Proposer.

It is known that, when $k\leqslant 1/\sqrt{2}$,

$$1+\sum_{n=1}^{\infty}\left\{\frac{1.3\ldots(2n-1)}{2.4\ldots(2n)}\right\}^3(2kk')^{2n}=4K^2/\pi^2,$$

where K denotes the first complete elliptic integral (mod k) and k' is the complementary modulus (see *Quarterly Journal of Mathematics*, Vol. xxxix, p. 32). Putting $k=k'=1/\sqrt{2}$, and making use of the result of Legendre that $K(\text{mod}\,1/\sqrt{2})=\{\Gamma(\frac{1}{4})\}^2/4\sqrt{\pi}$, we obtain the result required at once.

16664. (R. F. Davis, M.A.)—The product of 76 and 83 is 6308. Were this product 6378 its digits would have been the same as those of its factors. Determine two two-figure numbers having this property.

Solution by Lt.-Col. Allan Cunningham, R.E., *and* W. F. Beard, M.A.

This Question is most easily solved by "trial," *i.e.*, by examination

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of a small multiplication table. These five suitable numbers ($N = pq$) have been found—

$N = 1260, \quad 1395, \quad 1827, \quad 2187, \quad 6880$
$pq = 21.60, \quad 15.93, \quad 21.87, \quad 27.81, \quad 80.86.$

Note.—The Proposer furnishes two other numbers giving solutions of the Question, namely, $1530 = 30.51$, $1435 = 35.41$.

16627. (Professor E. B. Escott.)—For what values of d will the following equations have equal roots?—

$$bx + cy + az = d, \quad cx + ay + bz = d, \quad xy + yz + zx = d.$$

Additional Solution by M. T. Naraniengar, M.A., *and* R. F. Davis, M.A.

Evidently $d = 0$ or $(ab + bc + ca)$ will give the equal roots $x = y = z = 0$; or $x = a$, $y = b$, $z = c$ respectively. But, eliminating y and z and forming the quadratic in x, we see that the condition for equal roots is of the form $Ad^2 + Bd = 0$.

Hence the values of d in question are 0 and $(ab + bc + ca)$.

QUESTIONS FOR SOLUTION.

16696. (Leonard J. B. White.)—Given a series of decreasing angles $\theta_1, \theta_2, \theta_3, \ldots$, any one of which is connected with the preceding by the relation $e^{\theta_n \tan\alpha}\cos(\alpha + \theta_n) = e^{-\theta_{n-1}\tan\alpha}\cos(\alpha - \theta_{n-1})$, where α is an unknown constant. Required α in terms of θ and θ_n only. (The solution $\theta_n = -\theta_{n-1}$ is excluded.)

[N.B.—The problem suggested itself in the course of the investigation of the motion of a pendulum moving in a large arc under the influence of a resistance varying as the square of the velocity.]

16697. (S. Narayana Aiyar.)—Show that

$$\int_0^\infty \frac{e^{ar\cos\theta}}{(1-2r\cos\theta+r^2)^{\frac{1}{2}m}}[\sin A + \theta.\cos A]\frac{d\theta}{\theta(1+\theta^2)} = \tfrac{1}{2}\pi e^{ar}(1-r)^{-m},$$

where $A = n\theta + ar\sin\theta + m\tan^{-1}\dfrac{r\sin\theta}{1-r\cos\theta}$.

16698. (T. K. Venkataraman, M.A.)—Investigate the conditions under which the curves represented by the equations

$$\frac{dx}{p_1x+q_1y+r_1z+s_1} = \frac{dy}{p_2x+q_2y+r_2z+s_2} = \frac{dz}{p_3x+q_3y+r_3z+s_3}$$

are (1) plane, (2) indeterminate.

16699. (Professor Neuberg.)—Trouver l'équation différentielle des coniques passant par trois points donnés (x_1, y_1), (x_2, y_2), (x_3, y_3).

16700. (G. N. Watson, B.A.)—Prove that

$$\tfrac{1}{2}(n+1)[2^{n+1}+2+3^n] = 3^{n+1} + {}_{n+1}C_2.B_1.3^{n-1} - {}_{n+1}C_4.B_2.3^{n-3} + {}_{n+1}C_6.B_3.3^{n-5} - \ldots,$$

where $B_1, B_2, \ldots$ denote Bernoulli's numbers.

16701. (Lt.-Col. Allan Cunningham, R.E.) — Show that most numbers of form $N = (y^{16}-1)$ have at least six factors. State the exceptions.

16702. (Professor E. B. Escott.)—In the recurrent series

n : 0 1 2 3 4 5 ...
V_n : 3 0 2 3 2 5 ...,

whose scale of relation is $V_{n+3} = V_{n+1} + V_n$,

prove that when V_n and V_{-n} have a common factor p, the period of the residues of $V_m \pmod p$ is $3n$.

16703. (Professor Sanjána, M.A.)—(*a*) Show that when $10n+5$ is not a power of 5, $(x^{10n+5}-1)/(x-1)$ has three factors at least, n being a positive integer and $5x$ a perfect square.

16704. (A. M. Nesbitt, M.A.)—If J be the sum of n positive quantities of which a is one, prove that $\Sigma\, a\,(s-a) > n/(n-1)$ unless all the quantities are equal.

16705. (Hon. G. R. Dick, M.A. Suggested by Question 16392.)—The orthocentre O of a triangle ABC inscribed in a cardioide (as in Question 16392) is the cusp of the cardioide. Prove that

$$\sin AOX + \sin BOX + \sin COX = 0,$$

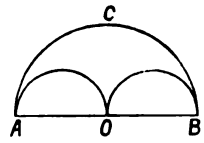
OX being the axis of the cardioide.

16706. (W. F. Beard, M.A. Suggested by Question 16467.)—Prove that, if a rectangular hyperbola circumscribed about a triangle, touches one of the altitudes, the triangle must be right-angled.

16707. (Professor Nanson.)—Two triangles Δ_1, Δ_2 are polar and the triangle Δ is self-polar to the same conic. If Δ, Δ_1 are inscribed in or circumscribed about a conic, so are Δ, Δ_2.

16708. (C. E. Youngman, M.A.)—In a rectangular hyperbola, if normals at A, B, C meet at P, the nine-point circle of ABC subtends a constant angle at P.

16709. (Professor Cochez.)—On donne une $\frac{1}{2}$ circonférence de diamètre AOB. Sur les rayons OA et OB on décrit des $\frac{1}{2}$ circonférences. (1) Inscrire un carré dans le triangle curviligne AOBCA. (2) Calculer le côté de ce carré en fonction du rayon R de la circonférence AB.



16710. (J. Blaikie, M.A.)—At H, the orthocentre of an acute-angled triangle ABC, HK is drawn perpendicular to the plane ABC such that HK is a mean proportional between the segments into which any one altitude is divided by the orthocentre. Prove that the three sides of the triangle, the three altitudes, the three medians, and the three bisectors all subtend right angles at K.

16711. (D. Biddle.)—Given the in-circle and lines representing the differences, $a-b$, $b-c$, construct the triangle.

16712. (W. Gallatly, M.A.)—A Simson line making angles $\theta_1, \theta_2, \theta_3$ with the sides of ABC, prove that its equation is

$$a\alpha\cot\theta_1 + b\beta\cot\theta_2 + c\gamma\cot\theta_3 = 0.$$

16713. (Sonti V. Ramanunty, B.A.)—Prove that the medial triangles of a spherical triangle and its polar triangle are in perspective.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11481. (Professor Crofton, F.R.S.)—A hexagonal frame is stiffened by three diagonal braces, joining each pair of opposite joints. The condition that it shall be possible for the frame to be *self-strained*, that is, in a state of internal stress, without the action of any external forces, is either (1) that the six joints shall lie on a conic section, or (2) that the three diagonals shall meet in a point, that is, that the hexagon shall be circumscribed about a conic section. A frame of less than six joints, containing only the number $(2n-3)$ of bars requisite for stiffness, cannot be *self-strained* (unless three joints lie in a straight line).

11483. (Professor Ramaswami Aiyar, M.A.)—A number of particles describe a conic U so that their velocity at any point $P = \mu.CD.V^{\frac{1}{2}}$, where μ is a constant, CD the semi-diameter conjugate to CP, and V is the power of the point P with respect to a given conic V. (1) Prove that the line joining any two of the particles always touches a conic of the system $U + \lambda V$, and their directions of motion intersect upon the reciprocal of this conic with respect to U; and (2) deduce therefrom Poncelet's theorems.

11621. (Professor Matz.)—Points P, Q, R are taken at random on the sides of a triangle ABC; the chance that the area of the triangle PQR will be greater than $(n+\frac{1}{4})$ of the triangle ABC (n being positive and $< \frac{3}{4}$) is

$$(-4n)/4 - \tfrac{1}{4}(12n+1)[\log 4/(4n+1)] + 8n^{\frac{1}{2}}[\tfrac{1}{3}\pi - \tan^{-1}(2n)^{\frac{1}{2}}].$$

11686. (Rev. T. P. Kirkman, M.A., F.R.S.)—x and k are any numbers equal or not. Imagine all the partitions of x that have fewer than $k+1$ parts (= places) to be once written, and then made k-plets by addition, where required, of zeros. Call these k-plets the filled k partitions of x. Requested along with the proof of the following, the name of its first propounder. Theorem: The sum of all the permutations of the filled k-partitions of x is the k-th coefficient in $(1+1)^{x+k-1}$.

11654. (Professor de Longchamps.)—L'équation

$$Ax^m + mBx^{m-1} + \tfrac{1}{2}[m(m-1)]Ax^{m-2} + \tfrac{1}{6}[m(m-1)(m-2)]Bx^{m-3} + f_{m-4}(x) = 0,$$

dans laquelle $f_{m-4}(x)$ désigne une fonction entière quelconque, du degré $m-4$, a, au moins, deux racines imaginaires.

11674. (R. W. D. Christie.)—Solve, by a simple quadratic equation, $x^2 + y = a$, $x + y^2 = b$; and test the method by assuming $a = 52$, $b = 16$.

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1.	Gain, Miss R. M.	Sacred Heart Convent, Barnes.
2.	Down, Miss E. M.	Girls' Secondary School, Devonport.
	Wetz, H. J. D.	St. Aloysius' College, Hornsey Lane, N.

Mathematics.

FIRST CLASS.

1.	Swords, W. J.	Municipal Secondary School, Devonport.
2.	Peace, J. N.	Penistone Grammar School.

Modern Foreign Languages.

FIRST CLASS.

1.	Boger, H.	St. Joseph's College, Beulah Hill.
2.	Wetz, H. J. D.	St. Aloysius' College, Hornsey Lane, N.

Classics.

FIRST CLASS.

1.	Wynne-Jones, E. I.	Ruthin Grammar School.
2.	Essex, V. W.	Hawkesyard College, Rugeley.

Natural Sciences.

FIRST CLASS.

[Not awarded.]

Taylor Jones Prize for Scripture History.

FIRST CLASS.

1.	Armstrong, Miss L. C.	Girls' Secondary School, Devonport.
	Duncan, Miss I. M. C.	The Friends' School, Mountmellick.

Pitman Medals for Shorthand.

1.	Whelan, R. P. (*Silver Medal.*)	St. Aloysius' College, Hornsey Lane, N.
2.	Williams, G. O. (*Bronze Medal.*)	St. Aloysius' College, Hornsey Lane, N.

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS. (Only those who obtained Distinction are included.)

Scripture History.

1.	Armstrong, Miss L. C.	Girls' Secondary School, Devonport.
	Duncan, Miss I. M. C.	The Friends' School, Mountmellick.

English Language.

1.	Williams, Miss D. C.	Girls' Secondary School, Devonport.
2.	Pickering, Miss M.	Wigton School.

English History.

1.	Duncan, Miss I. M. C.	The Friends' School, Mountmellick.

Geography.

1.	Gain, Miss R. M.	Sacred Heart Convent, Barnes, S.W.
	Raymond, L. W.	Dunheved College, Launceston.

Arithmetic.

1.	Swords, W. J.	Municipal Secondary School, Devonport.
2.	Barnes, W. L. H.	Polytechnic Commercial Secondary School, Regent St., W.
	Frost, H. R.	Municipal Secondary School, Devonport.
	Raymond, L. W.	Dunheved College, Launceston.

Geometry.

1.	Royle, A. G.	University School, Southport.
2.	Raymond, L. W.	Dunheved College, Launceston.

Mechanics.

1.	Williams, W. E.	Dunheved College, Launceston.
2.	Brand, R. T.	Private tuition.
	Buxton, N. St. J. G. D.	University College, Gower St., W.C.

Book-keeping.

1.	Holland, H. D.	St. Joseph's College, Dumfries.
	Pitcher, Miss G.	Guinevere School, Torquay.

Mensuration.

1.	Draysey, Miss D. L.	Pengwern College, Cheltenham.
	Williams, Miss B.	Advanced Elementary Girls' School, Merthyr Tydfil.

French.

1.	Gain, Miss R. M.	Sacred Heart Convent, Barnes, S.W.
	Guillain, P.	St. Joseph's College, Beulah Hill, S.E.

German.

1.	Thiemann, W. M.	Highbury High School, N.
2.	Klupfel, P. A.	St. Aloysius' College, Hornsey Lane, N.

Italian.

1.	Moore, G. F.	St. George's College, Weybridge.

Spanish.

1.	Boger, H.	St. Joseph's College, Beulah Hill, S.E.
2.	Oyarzabal, J.	St. Joseph's College, Dumfries.
	Pla, F.	St. Joseph's College, Beulah Hill, S.E.

Latin.

1.	Wynne-Jones, E. I.	Ruthin Grammar School.

Greek.

1.	Essex, V. W.	Hawkesyard College, Rugeley.

Light and Heat.

1.	Barton-Smith, A.	Private tuition.

Natural History.

1.	Cremen, Miss H.	St. Mary's Convent, Charleville.
2.	Gain, Miss R. M.	Sacred Heart Convent, Barnes, S.W.

Drawing.

1.	Coape-Arnold, R.	St. Joseph's College, Dumfries.
2.	Cottingham, G. R.	Polytechnic Commercial Secondary School, Regent St., W.

Music.

1.	Hackney, Miss C.	Rhianva College, Hunstanton.
2.	Conolly, Miss K. H.	Private tuition.
	Etches, Miss A. G.	The Hiatt Ladies' College, Wellington, Salop.

Shorthand.

1.	Whelan, R. P.	St. Aloysius' College, Hornsey Lane, N.
2.	Manisty, E. E.	Private tuition.

Domestic Economy.

1.	Hill, Miss R. E.	Congleton Ladies' College.
	Tucker, Miss M.	Girls' Secondary School, Devonport.
	Williams, Miss D. C.	Girls' Secondary School, Devonport.
	Wood, Miss M. F.	Private tuition.

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CLASS LIST — BOYS.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—

a. = Arithmetic.
al. = Algebra.
b. = Botany.
bk. = Bookkeeping.
ch. = Chemistry.
d. = Drawing.
do. = Domestic Economy.
du. = Dutch.
e. = English.
f. = French.
g. = Geography.
ge. = German.
geo. = Geology.
gm. = Geometry.
gr. = Greek.
h. = History.
he. = Hebrew.
i. = Italian.
l. = Latin.
lt. = Light and Heat.
m. = Mechanics.
ma. = Magnetism & Electricity.
ms. = Mensuration.
mu. = Music.
nh. = Natural History.
p. = Political Economy.
ph. = Physiology.
phys. = Elementary Physics.
s. = Scripture.
sc. = Elementary Science.
sh. = Shorthand.
sp. = Spanish.
tr. = Trigonometry.
w. = Welsh.
z. = Zoology.

The small figures [1] and [2] prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, Elem. = Elementary, End. = Endowed, Found. = Foundation, H. = House, Hr. = Higher, Inst. = Institute, Int. = International, Inter. = Intermediate, Poly. = Polytechnic, Prep. = Preparatory, P.T. = Pupil Teachers, S. = School, Sec. = Secondary, Tech. = Technical, Univ. = University.

FIRST CLASS [or SENIOR].

Honours Division.

Dow, E.F.P. *g.ms.f.d.*
Poly.Comm.Secondary S., Regent St., W.
Wetz, H.J.D. *g.gm.ms f.sh.*
St. Aloysius' Coll., Hornsey Lane, N.

Druett, L.H. *gm.ms.f.*
Stationers' Co.'s S., Hornsey, N.
Raymond, L.W. *g.a.gm.f.d.*
Dunheved Coll., Launceston

Peace, J.N. *gm.f.* Penistone Gram. S.
Waller, F.W. *f.* Tollington Park Coll., N.
Holland, H.D. *gm.bk.ms.f.*
St. Joseph's Coll., Dumfries
Wynne-Jones, E.I. *f.l.* Ruthin Gram. S.
Coape-Arnold, R. *ms.f.d.*
St. Joseph's Coll., Dumfries
Hill, S.W. *g.ms.*
Municipal Secondary S., Devonport
Golden, A.D. *ms f.*
St. Joseph's Coll., Dumfries

Frost, H.R. *g a.d.ms.*
Municipal Secondary S., Devonport
Royle, A.G. *g.gm.ms.d.*
University S., Southport
Williams, W.E. *m.f.*
Dunheved Coll., Launceston

Swords, W.J. *g..a.ms.*
Municipal Secondary S., Devonport
Burton, J.A. *g.f.* Penistone Gram. S.
Griffin, H.H. *g.ms.d.*
Municipal Secondary S., Devonport
Détouche, M.B. *ms.f.*
St. Aloysius' Coll., Hornsey Lane, N.
Roe, G.E. *q.*
Poly. Comm. Secondary S., Regent St., W.
Williams, G.O. *g.ms.sh.*
St. Aloysius' Coll., Hornsey Lane, N.
Jones, A.F. *f.* Gram. S., Eccles
Davis, A.G.
Poly.Comm.SecondaryS., RegentSt., W.
Boger, H. *sp.*
St. Joseph's Coll., Beulah Hill
Newman, A. *g.ms.f.*
Clark's Coll., Chancery Lane
Harber, L.G. *f.* Private tuition
Paine, A.H. *g.ms.*
Municipal Secondary S., Devonport

FIRST CLASS [or SENIOR].

Pass Division.

Taylor, F.L. *f.*
Market Harborough County Gram. S.
Ashlin, H.J. *g.ms.*
St. Aloysius' Coll., Hornsey Lane, N.
Ward, W.J. St. Philip'sGram.S., Edgbaston

Essex, V.W. *f.gr.*
Hawkesyard Coll., Rugeley
Verano, L. *ms.*
Christian Bros.' Coll., Gibraltar

Golden, T.L. *f.* St. Joseph'sColl., Dumfries
Barnes, W.H.L. *g.a.ms.*
Poly.Comm.SecondaryS., RegentSt., W.
Buxton, N.St.J.G.D. *m.*
University College, W.C.
Kendon, F.H. Bethany H., Goudhurst
Bent, F.G. Tollington Park Coll., N.

Doyle, P. *ms.* St.George's Coll., Weybridge
Whelan, R.P. *sh.*
St. Aloysius' Coll., Hornsey Lane, N.

Guillain, P. *f.* St.Joseph'sColl., BeulahHill
Burke, H. *f.* St. Joseph's Coll., Dumfries

Phipps, A.E. *f.*
Stationers' Co.'s S., Hornsey, N.
Theobald, R. University S., Rochester
Lacy, G.W. University S., Rochester

Husband, D.I. *f.*
St. George's Coll., Weybridge
Kornweibel, A.H.C. *d.*
St. George's Coll., Weybridge

Tovell, H. *d.*
Poly.Comm. SecondaryS., RegentSt., W.
Duffell, J.H. St. Joseph's Coll., Dumfries
Broady, A. Osborne HighS., W.Hartlepool

Currie, P. *ms.* St. Joseph's Coll., Dumfries
Glasse, J.M. *g.gm.f.*
Elizabeth Coll., Guernsey
Williams, T.S. Ruthin Grammar S.

Flood, J.F. St. Joseph's Coll., Beulah Hill
Jefferys, A.H.
Stationers' Co.'s S., Hornsey, N.

Churchill, J.B. *f.*
St. Joseph's Coll., Dumfries
Kemp, T. St. Joseph's Coll., Dumfries
Kendon, D.H. Bethany H., Goudhurst
Todd, F.J. The Greystones, Scarborough

Ashworth, B.J. HawkesyardColl., Rugeley

Gosling, F.H. *ms.* Bell's Gram. S., Coleford
Marriott, H. Grammar S., Eccles
Stubbs, W.A. *f.* Bethany H., Goudhurst

Breze, J.F. *ms.f.*
St. George's Coll., Weybridge
Cottingham, G.R. *d.*
Poly.Comm.Secondary S., RegentSt., W.
Kitt, A.J.
Municipal Secondary S., Devonport

Kingdon, A.W. *f.* Private tuition
Ridoutt, H.C. *ms.*
Buckingham Place Acad., Portsmouth
Wilkins, H.L.
Stationers' Co.'s S., Hornsey, N.

Edwards, H. Ruthin Gram. S.
Oxby, F.H. Tollington Park College, N.

Eaton, A.R.C. *g.d.* Private tuition
Walmsley, G.H. Private tuition

Le Messurier, J.N. *f.* Private tuition
Piejus, R.H. *f.*
Stationers' Co.'s S., Hornsey, N.

Batten, R. *g.*
Municipal Secondary S., Devonport
Gilbert, R.W.A *f.*
Eastward Ho! Coll., Felixstowe
Imossi, L. *f.sp.*
Christian Bros.' Coll., Gibraltar

Brand, R.T. *m.f.* Private tuition
Mills, H.J. Tollington Park Coll., N.
Pickering, S.
Stationers' Co.'s S., Hornsey, N.

Ceiley, L.R. *g.*
Tollington S., Muswell Hill, N.
Richards, J.B. *g.f.*
University S., Southport
Jones, H.T. Private tuition

Bannard, J.W.Y. *g.* Private tuition
Gallen, R.A.L. Ruthin Gram. S.

Dart, P.J.
Municipal Secondary S., Devonport
Thornton, L.S.R. Private tuition

Davies, E.R. St.George's Coll., Weybridge
Sunley, G. *ms.*
St. Aloysius' Coll., Hornsey Lane, N.

Randall, E.L. *f.* Private tuition
Skentelbery, B.T. Liskeard County S.

Lane, H.C. Bethany H., Goudhurst
Mann, L.G. Stationers'Co.'sS., Hornsey, N.
Parsloe, W.H.
Stationers' Co.'s S., Hornsey, N.

Jennings, E.P. ManorH., ClaphamCommon
Nutting, H.M. Private tuition

Oliver, J.H. Alton H., Blackheath

Gowland, T.S. Private tuition
Hughes, J. Private tuition
Pye, H.C. *g.* Private tuition
Williams, J.H. Private tuition

Manisty, E.E. *sh.* Private tuition

Peile, J.A. Wigton School
Teague, H.C. Private tuition

Mackay, B.W. St.George'sColl., Weybridge
Wells, F.
Poly.Comm.SecondaryS., RegentSt., W.

Smith, J.W. Stanley H., Margate

Gardiner, E.V.G. *ms.*
Stafford Coll., Forest Hill
Hughes, R.L. Gram.andColl.S., Carnarvon

Hammond, R.B.
Aspen Grove Hr. Grade S., Liverpool
Scullard, G.T.B.
Christian Bros.' Coll., Gibraltar

Drury, A.W. Ruthin Grammar S.
Norton, F. Hawkesyard Coll., Rugeley

Prothero, E.S.T. *d.*
Advanced Elem. Boys' S., Merthyr Tydfil
Welsby, B.P.
St. Philip's Gram. S., Edgbaston

Charley, G.W. *d.*
The Douglas S., Cheltenham
Partridge, S.C. Merchant Taylors' S., E.C.

Keegan, W. St. Philip'sGram.S., Edgbaston

Hardy, G.B.
Archbp. Holgate's Gram. S., York
Ryder, C.S. *g.* Private tuition
Stubbs, E.E. Private tuition

Chant, E.V. University S., Rochester
Thierens, F.J. Private tuition

Hacking, A.B. *f.* Mill Hill School, N.W.
Head, A.E. *d.* Private tuition
Leach, S. *f.* Christ Coll., Blackheath

Aston, T.F. *g.* Bell's Gram. S., Coleford
Gregory, J.A. Ashland High S., Wigan

Carrasco, J. Christian Bros.'Coll., Gibraltar
Hunt, R.F. *ms.*
Richmond Hill S., Richmond

Cooper, W. Tudor Hall, Hawkhurst
Hollow, J.W. P.-T. Centre, Penzance

Stewart, C.P. *ms.* Private tuition
Vincent-Brown, K.
St. George's Coll., Weybridge

SECOND CLASS [or JUNIOR].

Honours Division.

Absalom, H.W.L. *e.h.g.a.al.lt.ch.d.*
Portsmouth Boys' Secondary S.
Thiemann, W.M. *g.ms.f.ge.*
Highbury High School, N.
Rundell, R.C. *a.al.*
Portsmouth Boys' Secondary S.
Steed, A.D. *al.gm.d.*
Portsmouth Boys' Secondary S.

Clarke, R.A. *al.f.*
Portsmouth Boys' Secondary S.
White, W. *a.al.gm.m.lt.* Private tuition

Arlabosse, J. *f.sp.*
St. Joseph's Coll., Beulah Hill
Parks, G.E.H. *al.f.*
Portsmouth Boys' Secondary S.

Potter, W.J. *al.lt.*
Portsmouth Boys' Secondary S.
Thompson, E.F. *a.al.*
Portsmouth Boys' Secondary S.
Vine, L.E. *a.al.m.ma.phys.*
Collegiate S., Bridgwater
Liley, J.A. *e.g.al.f.*
Univ. Tutorial Coll., Red Lion Sq., W.C.
Dalby, J. *a f.d.* Grammar S., Eccles

Brooks, W.M. *a.gm.phys.*
Esplanade H., Southsea
Garraway, G.T. *f.d.*
St. Paul's S., West Kensington
Summers, R. *a.al.d.*
Poly.Comm.Secondary S., Regent St., W.
Watts, E.T. *g.a.lt.d.* St.James the Great S., Keyham, Devonport

Jeffery, W.J.E. *al.f.lt.*
Portsmouth Boy's Secondary S.
Alabone, L. *a.al.f* Brighton College
Humby, L.J.
Portsmouth Boys' Secondary S.

Bustinza, P. *bk.*
St. Joseph's Coll., Dumfries
Linnington, O.W. *l.*
Portsmouth Boys' Secondary S.
Phillips, J.J. Pentre Higher Elem. S.
Watson, A.H. HumberstoneFoundationS., Old Clee, Grimsby

Hoar, P.G. *g.al.*
Portsmouth Boys' Secondary S.
Pugh, D.H. *ma.d.*
Pentre Higher Elementary S.

Bowell, C.W. *al.bk.*
Poly.Comm.Secondary S., Regent St., W.
Hughes, J.L. *ch.*
Lewisham S., Weston-s.-Mare

Davies, D.P
Adv. Elem. Boys' S, Merthyr Tydfil
Jones, G. *w.* Pentre Higher Elem. S.

Teager, W.E. *a.al.* Eye Grammar S.

Watson, H.J. *a.al.lt.*
St.JamestheGreatS., Keyham, Devonport
Wilcox, W. Eye Grammar S.
Williams, E. *al.d.* Pentre Higher Elem. S.

Gould, W.G. *al.lt.*
Portsmouth Boys' Secondary S.
Jones, A.D. *a.d.* Pentre Higher Elem. S.
Tunnard, H.B. *a.d.* Dulwich College, S.E.

Hall, A. *a.ma.*
Training College Model S., York
Maidment, D.J. Ferndale Secondary S.
Pedler, F. *m.ms.d.*
Adv. Elem. Boys' S., Merthyr Tydfil
Pound, J.T. *al.*
Portsmouth Boys' Secondary S.

Scarbrough, H.T. *al.d.*
Portsmouth Boys' Secondary S.

Barker, D.F. *d.* Eye Grammar S.
Muchmore, A.a.d. St.GermansEndowedS.

Dawson, F.A. *s.g.*
Commercial S., Bridlington
Graham, K.J.M. *f.ch.*
St. Paul's S., West Kensington
Harrison, W.L.A. *g.*
St. Paul's S., West Kensington
Kershaw, C. *f.* University S., Southport

Ginns, J.S. Hawkesyard Coll., Rugeley

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BOYS, 2ND CLASS, HONS.—*Continued.*

Henwood, E.C.D. *lt.d.* Portsmouth Boys' Secondary S.
Rees, H. *al. ms. d.* Adv. Elem. Boys' S., Merthyr Tydfil
Caldana, A.G. *f.* Marist Brothers' Coll., Grove Ferry
Pepper, F.R. Portsmouth Boys' Secondary S.
Coninck, H.J. *lt.* St. Joseph's Coll., Beulah Hill
Snell, L. Eye Grammar S.
Pay, W.L. *d.* Eye Grammar S.
Stiell, W.F. Manor H., Clapham Common
Gibson, C.H. Lindisfarne Coll., Westcliff-on-Sea
Lee, J. Brunt's Tech. S., Mansfield
Clarkson, S. *s.* RedbySchools, Sunderland
Petersen, V.L. Portsmouth Boys' Secondary S.
Steere, F.B. Brighton Grammar S.
Wright, P. *s.* University S., Southport
d'Amorim, J.R. *f. ge.* St. George's Coll., Weybridge
Rayner, H.O.J. *f. ma.* Private tuition
Bernard, P. *bk. f.* Marist Brothers' Coll., Grove Ferry
Dally, A.T. *al. f.* Private tuition
Duffy, J. St. Joseph's Coll., Dumfries
Russell, B. *a.* Newtown S., Waterford
Grover, S.A. *d.* Montrose Coll., Streatham Hill
Lyndsell, A. *d.* Poly. Comm. Secondary S., Regent St., W.
Rae, W. *d.* St. Joseph's Coll., Dumfries
Thomas, E.D. *al.* Adv. Elem. Boys' S., Merthyr Tydfil
Alston, C. McC. Hearn H., Hampstead
Thomas, H. *al.* Adv. Elem. Boys' S., Merthyr Tydfil
Hughes, B.T. *d. mu.* PentreHigherElem. S.
Olf, E.F. *bk.* Poly. Comm. SecondaryS., Regent St., W.
Schott, H. *mu.* Archbp. Holgate's Gram. S., York
Stokes, G. *ch.* Newtown S., Waterford
Hart, B.W. Devonport High S.
Monk, G.B.F. *f. ge. l.* St. George's S., Haysenden
Hardy, E.A. *d.* St. Paul's S., W. Kensington
Steger, F. *d.* Pentre Higher Elem. S.
Bould, A.L. *s. e. d.* St. Luke's S., Leek
Catling, C.T. St. Joseph's Acad., Kennington Rd., S.E.
Murciano, R. *sp.* Christian Brothers.' Coll., Gibraltar
Berry, A.J. Grammar S., Eccles
Grace, W.A. Lindisfarne Coll., Westcliff-on-Sea
Turner, M.R. *al. d.* St. Oliver S., Hanley
Daly, J.W. St. Joseph's Acad., Kennington Rd., S.E.
Nida, C. *al.* St. Joseph's Coll., Beulah Hill
Scott, K.C. *ma.* 12 Ranelagh Mansions, Hurlingham, S.W.
Turtle, W. Newtown S., Waterford
Ashbrook, H.R. *ms.* Grammar S., Eccles
Craggs, H.W. *al.* Portsmouth Boys' Secondary S.
Jones, I. (Junior) *ma. d.* Pentre Higher Elem. S.
Malcomson, D. *s.* Newtown S., Waterford
Baly, P.R. Grammar S., Ealing
Hopkins, R. Pentre Higher Elem. S.
Coates, F.J. St. Joseph's Acad., Kennington Rd., S.E.
Evans, M.M. Adv. Elem. Boys' S., Merthyr Tydfil
Gerard, R. *al.* Hawkesyard Coll., Rugeley
Murray, C.T. Poly. Comm. SecondaryS., RegentSt., W.
Rudd, F.J. PortsmouthBoys'SecondaryS.
Wood, W.C.S. *ge. l.* Private tuition
Hoare, H.A. Portsmouth Boys' Secondary S.
McNicholas, J. St. Mary's Coll., Middlesbrough
Lewis, D.B.T. *f.* Christ Coll., Brecon
Wells, A.W. *a. al.* Private tuition
Carter Braine, J.F. St. Paul's School, W. Kensington
Dawson, D.T. Commercial S., Bridlington
Elliott, A. *a. al.* Training College Model School, York
Kelly, B.J. University S., Southport
Philips, B. Adv. Elem. Boys' S., Merthyr Tydfil
Millett, H. *a. f.* Private tuition
Bunard, A. *bk. f* Marist Brothers' Coll., Grove Ferry
Jones, I. (Senior) Pentre Higher Elem. S.
Loufte, H. St. Aloysius' Coll, Hornsey Lane, N.
Taylor, W, A. *d.* Eye Grammar S.
Hier, T.P. *d.* Adv. Elem. Boy's S., Merthyr Tydfil
Speakman, J.D. Ruthin Grammar S.
Weakley, J.F. Lindisfarne Coll., Westcliff-on-Sea
Brunt, H.J. St. Joseph's Acad., Kennington Rd., S.E.
Hogan, E. St. Joseph's Coll., Dumfries
Lamont, S.T. *s.* University S., Southport
Lees, J.H.D. *f. d.* Lindisfarne Coll., Westcliff-on-Sea
Sharp, G.R. Newquay College
Allan, P. St. Joseph's Coll., Dumfries
Coombs, H.R. Beverley School, Barnes
McSweeny, P.H. London C. of Pharmacy, Clapham Rd., S.W.
Millard, N.P. 36 Stapleton Hall Rd., N.
Stewart, J. *d.* Wigton School

SECOND CLASS [*or JUNIOR*].

Pass Division.

[1]Brown, W.H. The College, Weston-s.-Mare
[1]Barnes, J. Private tuition
[1]Marshall, H. *d.* Private tuition
[1]Mason, H. *d.* Private tuition
[1]Dodson, F.S. Stationers' Co.'s S., Hornsey, N.
Brown, R. YorkshireSociety'sSchool, S.E.
Hein, G.E. *d.* St. George's Coll., Weybridge
Watts, J.C. *al.* Mercers' School, E.C.
Welton, J.R. *bk. d.* Lindisfarne Coll., Westcliff-on-Sea
Levy, R.A. Lindisfarne Coll., Westcliff-on-Sea
McKay, C.S. Manor H., Havant
Beall, S.N. *sh.* Alleyn's S., Dulwich
Kilroe, F. St. Joseph's Coll., Dumfries
Lavoye, A. *f.* Marist Brothers' Coll., Grove Ferry
Meade, J.A. Hawkesyard Coll., Rugeley
Nash, J.S. Poly. Comm. Secondary S., Regent St., W.
Saiyut, Private tuition
[1]Sharp, W.H. Poly. Comm. Secondary S., Regent St., W.
[1]Stubbs, N.H. Bethany H., Goudhurst
[1]Whitford, J. *do.* St. Austell County S.
Combridge, E.C. Grove H., Highgate
Martin, E.T. *f.* University S., Southport
Smith, R.S. Private tuition
Warner, W. *ma. d.* Brunt's Tech. S., Mansfield
[1]Burbridge, W.N. Private tuition
Evelyn, A. Sir James Smith's Gram. S., Camelford
Leclerc, M. *f.* Marist Brothers' Coll., Grove Ferry
Davis, C.W.C. Portsmouth Boys' Secondary S.
Ferris, F.C. *f.* Wilson Coll., Stamford Hill, N.
Hitchcock, E.W. *s.* St. JamestheGreatS., Keyham, Devonport
Hoare, W.H. Southampton Boys' Coll. & High S.
Smith, H.P. PortsmouthBoys SecondaryS.
Batsford, J.F. *a. al.* Private tuition
[1]Burrows, E.J. *f.* Marlborough College
Grubb, A. Newtown S., Waterford
Lennox, J. *bk.* St. Joseph'sColl., Dumfries
O'Connor, J. St. Joseph's Coll., Dumfries
[1]Pettit, C.P. Poly. Comm. SecondaryS., RegentSt., W.
Garrick, J.A. Argyle H., Sunderland
Masters, W.E. Private tuition
Speakman, E.V. *al.* Ruthin Gram. S.
Wood, H. *bk.* The HermitageS., Grimsargh
[1]Berger, A. *g.* Poly. Comm. SecondaryS., RegentSt., W.
Cleare, C.R. WilsonColl., StamfordHill, N.
Cooper, N. *bk.* St. Aloysius' Coll., Hornsey Lane, N.
Stiven, F.W. St. Paul'sS., WestKensington
Bryan, H.S. Bishop's Stortford College
Charlesworth, R.G. St. Paul's S., West Kensington
[1]Griffiths, H.J. Bethany H., Goudhurst
Knight, A. *g. d.* St. Boniface's Coll., Plymouth
Lishman, W. Battle Hill S., Hexham
Peter, T.E.J. *f.* Marist Brothers Coll., Grove Ferry
Horden, W.F. Richmond H., Handsworth
Rocca, J. Christian Bros.' Coll., Gibraltar
Wilkinson, G. Middle Class S., Gosport
[1]Balls, F.W. EastwardHo!Coll., Felixstowe
Jones, J.L. Ruthin Grammar S.
[1]Macdonald, A. Private tuition
Reid, J.L. Nelson School, Wigton
[1]West, D.A. St. Dunstan's Coll., Margate
Bannerman, S.H. *al.* Private tuition
[1]Clark, A.G. Bethany H., Goudhurst
Edwards, L. St. Joseph's Coll., Beulah Hill
Kitchin, R. St. Joseph's Coll., Beulah Hill
Lansdale, E.C. Christ Church Hr. Elem. S., Southport
O'Brien, J.V. *d.* St. George's Coll., Weybridge
Pounds, W.H. Milton Coll., Bexley Heath
Shrimpton, G.V. *d.* The College, Weston-super-Mare
[1]Tollemache, D.J. St. George's Coll., Weybridge
Veitch, J.R. Richmond Lodge, Torquay
[1]Wainwright, A. Grammar S., Eccles
Carson, H.R. *a. al. f.* Private tuition
Durrant, C.B. University S., Rochester
[1]Herbert, H.D. Queen Elizabeth's Gram. S., Mansfield
Peter, S. *al.* New Coll., Herne Bay
[1]Bennett, C.J.F. 57 Lansdowne St., Hove
[1]Bernard, A.S. BrondesburyColl., WillesdenLane, N.W.
Carroll, J. *a.* St. Joseph's Coll., Dumfries
Friesleben, W.H. *al.* Poly. Comm. SecondaryS., RegentSt. W.
Garces, L.H. *h. sp.* Queen's Coll., Taunton
Jenkins, E. Adv. Elem. Boys' S., Merthyr Tydfil
Laborda, F.E.R. Private tuition
Maltby, H.W. *l.* Private tuition
Poole, A.R. St. John's Coll., Brixton
[1]Thomas, T.J. Private tuition
Davies, G.S. Pentre Higher Elem. S.
Hudson, F.E. *d.* St. Joseph'sColl., Dumfries
Lewis, J.T. PortsmouthBoys'SecondaryS.
[1]Mackay, J. St. George's Coll., Weybridge
Stamp, S. *al.* Private tuition
James, G.L.H. *d.* Grove H., Highgate
Lawrence, F.C. Portsmouth Boys' Secondary S.
Nelson, H. *d.* St. Joseph's Coll., Dumfries
[1]Pearson, A. Redby Schools, Sunderland
Sarra, W.H. St. Paul's S., West Kensington
Simon, R.P. Private tuition
Clifford, P.R. Fartown Grammar S., Huddersfield
Daintith, J. Private tuition
Hope, J. Grammar S., Eccles
[1]Kennedy, F.H. Hillmartin Coll., Camden Rd., N.W.
Maidment, W.J. Camberwell Grammar S.
Roberts, C.Y. Private tuition
Wood, D. GrammarS., Chorlton-cum-Hardy
Bebb, R.H. Queen Mary's Grammar S., Walsall
Brown, A. The College, Weston-s.-Mare
Camacho, G.S. St. George'sColl., Weybridge
James, I.S. Private tuition
[1]Moss, V. Bethany H., Goudhurst
Murphy, M.C. St. Joseph's Coll., Dumfries
Thomas, T.G. Ferndale Secondary S.
Walters, L.A. *ms.* MelbourneColl., Anerley
Anette, H. *f.* Marist Brothers' Coll., Grove Ferry
Mahon, P. St. Mary's Coll., Middlesbrough
Peckover, L.E.C. *al.* Charlecote, Worthing
[1]Sharpe, J. Private tuition
Smith, G.A. Private tuition
French, F.P. Le P. *f.* The Hermitage S., Grimsargh
[1]Appleton, G. Catholic Gram. S., St. Helens
Burge, G.H.K. Kensington Coaching Coll., S.W.
Holmes, P.W. Grammar S., Ealing
Johns, I.L. Porth Hr. Grade S.
[1]Mitchell, F.N. Private tuition
Watson, H.L. Bethany H., Goudhurst
Webster, T. OsborneHighS., W. Hartlepool
Wilson, C.R. Magdalen Coll. S., Wainfleet
Dootson, N. Private tuition
Lindeman, S.J. *gr.* Haileybury Coll., Hertford
Wright, J.E. Private tuition
Bamberger, S. *al.* Southend Grammar S.
Bath, J.A. *a.* Newquay College
Cales, F.L. Yorkshire Society's S., S.E.
[1]Covington, A.H. Stationers' Co.'s S., Hornsey, N.
Eldridge, R.G. Lindisfarne Coll., Westcliff-on-Sea
Fletcher, R.M. Lindisfarne Coll., Westcliff-on-Sea
Gomez, J. *sp.* Christian Bros.' Coll., Gibraltar
Hamilton, M. St.C. Arnold H., Chester
Jones, T. *w.* Pencader Grammar S.
[1]King, A.G. Gram. S., Saltaire, Shipley
Kitchingman, C.L. Stafford Coll., Forest Hill
Payne, T.M. South Wales Tutorial Classes, Cardiff
Pemberton, G.G. Ruthin Grammar S.
Rugeroni, A.C. *sp.* Christian Bros.' Coll., Gibraltar
Bishop, V.A. St. George's Coll, Weybridge
Catnach, T.B. Newcastle Modern S.
Edwards, J. *al.* Grammar S., Carmarthen
Keen, A.O. *s.* Lindisfarne Coll., Westcliff-on-Sea
Kelly, F. *bk.* St. Joseph's Coll., Dumfries
Leake, A.B. Training Coll. Model S., York
Meates, B.C. Private tuition
Moore, L.L. *al.* Portsmouth Boys' Secondary S.
Perez, J.M. St. George's Coll., Weybridge
Wolfendale, N.M. Magdalen Coll. S., Wainfleet
Worrall, L.C.W. Grove H., Highgate
Clough, A. St. Joseph's Coll., Dumfries
Cockell, C. University S., Rochester
Piper, C.H. *d.* Bethany H., Goudhurst
Roux, M.P.E. *f.* Godwin Coll., Margate
Rutter, F. Culham College S., Abingdon
Brass, D.J. Bethany H., Goudhurst
Faull, H. Grammar S., St. Ives
Hughes, E.L. St. John's Coll., Brixton
[1]Hutchins, R.E. Private tuition
Jones, G.T. *ch.* Porth Hr. Grade S.
McElhatton, A. St. Mary's Coll., Middlesbrough
Boon, C.J. Esplanade H., Southsea
[1]Cooke, J. Private tuition
Gaillard, A. *f.* St. Aloysius' Coll., Hornsey Lane, N.
Pearce, A.H. Brondesbury Coll., Willesden Lane, N.W.
Back, G.K. Poly. Comm. Secondary S., Regent St., W.
Bray, L. Richmond Hill School
Chapman, W.A.F. Ramshaw's Coll., Kensington
Sanford, W.R. *d.* Camberwell Grammar S.
Wainwright, O. *bk. d.* St. Joseph's Coll., Dumfries
[1]West-Kelsey, F. *g.* Fawbert and BarnardS., Sawbridgeworth
Wilson, C.J. Littleton H., Knowle
Dixon, C. The Northern Inst., Leeds
Ellis, J.E. West Leeds High S., Annley
[1]Harrison, H.E. University S., Rochester
Howman, J. Belmore H., Cheltenham
Hudier, J. Marist Brothers' Coll., Grove Ferry
Place, T.B. Private tuition
[1]Rutherford, H.I.F. Training Coll. Model S., York
Sinden, C., Richmond Hill School
Thomson, A.W. Milton Coll., BexleyHeath
Trueman, F.W. *f.* RoyalGram. S., Guildford
Wright, H.S. Private tuition
Bado, A.J. *sp.* Eastbourne College
Dukes, W. Yorkshire Society's S., S.E.
Heather, D. Newton S., Waterford
Irving, J.F. Private tuition
James, G. Adv. Elem. Boys' S., Merthyr Tydfil
Jones, G.V. Hillmartin Coll., Camden Rd., N.W.
Lennon-Brown, A.G. Kensington Coaching Coll., S.W.
Lewis, E.C. Private tuition
Llarena, E.F. *f.* Dulwich College, S.E.
[1]Ross, J.A. St. George's Coll., Weybridge
Boyer, G.W.B. Magdalen Coll. S., Wainfleet
Clements, P.A. Market Bosworth Gram. S.
Collins, W. Hr. Standard S., Sutton-in-Ashfield
Eshelby, J.M. University S., Southport
Johns, G.G. Old College S., Carmarthen
Livingston, J.M. St. George's Coll., Weybridge
Thomas, G. Porth Hr. Grade S.
Barnett, A.E. The Douglas S., Cheltenham
Bryan, J.H.H. Ruthin Grammar S.
Hotchkiss, C.L. Chadsmoor National S., Cannock
Konrath, G.L. St. Joseph's Acad., Kennington Rd., S.E.
Parkes, F.W. Ruthin Grammar S.
Pearson, J. *al.* Private tuition
Bell, C. Poly. Comm. Secondary S., Regent St., W.
Brook, G.W. Fartown Gram. S., Huddersfield
Eccles, E. St. Joseph's Coll., Dumfries
Ellam, H.J. Private tuition
Hall, P.C. St. Peter's Coll., Brockley
Moore, F.P. Catford Coll. S., Lewisham
Poynton, C.E. Grammar S., Eccles
Ramsden, A. St. Boniface'sColl., Plymouth
Shaw, C.E. ChadsmoorNationalS., Cannock
[1]Simmons, P.N. Grove H., Highgate
Smith, H.W. New Coll., Herne Bay
[1]Buck, E. Private tuition
Charly, M. *f.* Marist Brothers' Coll., Grove Ferry
Clarke, H. Froebel H., Devonport
[1]Clemmens, E.W.S. Private tuition
Henry, M.G. Private tuition

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BOYS, 2ND CLASS, PASS—*Continued.*

Protheroe, H.T. Pentre Higher Elem. S.
Williams, W.L. Hoe Gram. S., Plymouth

George, T.H. Grammar S., Taplow
Norris, E.W. *d.* University S., Rochester
Oyarzabal, J. *sp.* St. Joseph's Coll., Dumfries
Preston, R. Wigton School
[1]Summers, L.W.
Brondesbury Coll., Willesden Lane, N.W.
Vincent, L.J.
St. Paul's S., West Kensington

Chalke, S.H. Grammar S., Chichester
Cook, A.T. Private tuition
Haynes, J. *sp.*
Christian Bros.' Coll., Gibraltar
Jones, W.E. Ruthin Grammar S.
Revill, R. Brunt's Tech. S., Mansfield
Richardson, A.E.
Brunt's Tech. S., Mansfield
[1]Treasure, C.W. Private tuition

Ellis, N. *d.* Southend Grammar S.
Goring, A.F. *al.* University S., Rochester
[1]Hunter, J.N. Private tuition
Kim Yoo Bath College
[1]Warner, P.C. Private tuition

Dain, J.L. Bridgnorth Grammar S.
Dawes, P.T. St. John's Coll., Brixton
Dumbreck, A.L. Private tuition
[1]Jenkins, H.R. P.-T. Centre, Pontypridd
Jones, A.J. Private tuition
McConnachie, G.R.
St. Joseph's Coll., Dumfries
Parrott, L.O. Warner's Coll., Richmond

Bond, R.E. Rastrick Gram S., Brighouse
Bradley, R.G. 15 EllerkerGdns., Richmond
Burd, T. *s.* Ruthin Grammar S.
Lloyd, T.J. Pencader Grammar S.
[1]Norburn, H.A. Private tuition
O'Carroll, M. St. Joseph's Coll., Dumfries
Southwell, C.S.
Clark's Coll., Brixton Hill, S.W.

Drake, H.M. Private tuition
[1]Ewen, W. *d.* St. Joseph's Coll., Dumfries
[1]Hill, A. Private tuition
Kenyon, J.H. *d.*
Poly. Comm. Secondary S., Regent St., W.
Mansfield, R. St. Joseph's Coll., Dumfries
Muir, J.C. Upholland Gram. S., Orrell
[1]Stapley, C.J. Bethany H., Goudhurst
Urwin, G.F. Alleyn's S., Dulwich

Beadon, C.P. Queen's Coll., Taunton
[1]Edward, E.W. University S., Rochester
Gribbin, H.
St. Mary's Coll., Middlesbrough
[1]Grimes, S.C. Private tuition
MacFarlane, G.A.
Higher Grade S., Kilmallil, Fort William
Norman, R.D.
St. George's Coll., Weybridge
Roper, R.L. Hoe Gram. S., Plymouth
Stancliffe, C.E.
Training Coll. Model S., York
[1]Walton, N.G. Henry Smith S., Hartlepool

[1]Cope, C.E. Bell's Gram. S., Coleford
Harding, G.H. Private tuition
Noakes, F. Wigton School
[1]Taylor, H.B. Private tuition
Temple, R. Training Coll. Model S., York
Williams, J.E. Ruthin Grammar S.

Cooper, W.H.
St. Aloysius' Coll., Hornsey Lane, N.
Fellows, M. *a.* Private tuition
Hatton, W.D. *f.*
Kilmorie, St. Margaret's Bay, Dover
[1]Moody, W. Catholic Gram. S., St. Helens
Moylan, F.E.
St. Aloysius' Coll., Hornsey Lane, N.
[1]Nolan, W. Private tuition
Southall, J. Edgbaston Academy
Woodroofe, R.F. Private tuition

Butler, H. St. Joseph's Coll., Beulah Hill
Combs, W.A. *d.* 57 Lansdowne St., Hove
Hallett, L.R. Private tuition
Hill, A.G.
Lindisfarne Coll., Westcliff-on-Sea
Jefferies, C.H.
St. Paul's S., West Kensington
Judge, W.J. University S., Rochester
Kennedy, D.M. Brighton Grammar S.
Manicom, H.C.B. University S., Rochester
Molyneux, T. Catholic Gram. S., St. Helens
Roberts, T.S. Probus S., Cornwall
[1]Swainson, E. Ruthin Grammar S.

Lee, A.
Poly. Comm. Secondary S., Regent St., W.
Smith, R.G. *d.* Wigton School
Wright, S.M. Private tuition

[1]Bevis, D.A. Portsmouth Grammar S.
Hodgson, F.W. Ruthin Grammar S.
Holdsworth, H.B. *ch.*
Archbp. Holgate's Gram. S., York
Jenkins, C.F.B. Grammar S., Ealing
Quince, A. de C. Grammar S., Ealing

Dunford, E.T. Newcastle Modern S.
Earle, W.F. Camberwell Grammar S.
Fuller, C.E. *d.* Hounslow P.-T. Centre
Hassall, F.S. Private tuition
Jarvis, H.E. Paddington High S. for Boys
Lloyd, E.T. *ch.* Porth Hr. Grade S.
[1]Potter, A.E. Portland Coll., Chiswick
Taylor, W.J. Endcliffe Coll., Sheffield
Torkington, F. Private tuition
Woolley, H.G. Belle Vue H., Greenwich

Allen, G.M.H. *h.* Private tuition
Barker, G.T. Scorton Gram. S.
Barnden, P.W. Private tuition
Gibson, C.C.G. Private tuition
Milne, R. *al.f.* Hr. Grade Public S., Ellon
Mullin, J.C. St. George's Coll., Weybridge

Andrews, L.E.
Holmwood S., Bexhill-on-Sea
Cole, R.S. Bethany H., Goudhurst
Hicks, J.G. Portsmouth Boys' Secondary S.
Jones, D.J.
Adv. Elem. Boys' S., Merthyr Tydfil
[1]Moakler, R.J.
St. Philip's Gram. S., Edgbaston
Nealon, G.R. Private tuition
Chiappa, J.J.
St. Aloysius' Coll., Hornsey Lane, N.

Brill, H.V. Grove H., Highgate
Bryan, J.M. Private tuition
[1]Crozier, E.J.
Stationers' Co.'s S., Hornsey, N.
[1]Herbert, J.H. Private tuition
Isaac, A.C.T. *d.* Grove H., Highgate
Liffschitz, S. *ge.* Private tuition
[1]Perham, E.
Poly. Comm. Secondary S., Regent St., W.
Smith, A.E. Bethany H., Goudhurst
Stacy, W.B. Skerry's College, W.C.
[1]Taylor, W.F. *d.* Holloway Coll., N.

Murphy, J.B. Grammar School, Belper
[1]Redford, S.A. Grove H., Highgate
Thomson, J. Private tuition
Westbrook, W. *d.*
Poly. Comm. Secondary S., Regent St., W.

Boot, P.E. West Hill Council S., Hednesford
Hawkins, J.L.B
Commercial S., Wood Green, N.
Lacy, P. Huddersfield Technical Coll.
Stephens, G.W. 8 Douglas Rd., Handsworth
Sturridge, M.H.G. Private tuition
Watts, F.G. Private tuition
Welham, A.C. Training Coll. Model S., York

Davis, S. Salesian S., Battersea
Howell, W.D.
Montrose Coll., Streatham Hill
Middleton, L.M. Private tuition
Morpeth (Junr.), G.J.F.
62 Lauriston Place, Edinburgh
Pegg, F.J. London Coll., Holloway Rd., N.
Ratee, W.E. *bk.*
Eastward Ho! Coll., Felixstowe
Slater, C.L. Melbourne Coll., Auerley
Watkinson, A.A.
Humberstone Foundation S., Clee

Bradfield, G.R.D. Private tuition
Davies, G. St. Joseph's Coll., Dumfries
Mildren, W.F. Grammar S., Hayle
[1]Westcombe, W.R. University S., Rochester

Berryman, G.F. Bedford Gram. S.
Carruthers, A. Brunt's Tech. S., Mansfield
Dawson, L.S.M.
331 Crookesmoor Rd., Sheffield
Hayes, E. St. Boniface's Coll., Plymouth
Temple, A. Bethany H., Goudhurst
Vizard, F.L. Bethany H., Goudhurst
Ward, A.D. Private tuition
Williams, T.P. Porth Hr. Grade S.

Curtis, H. Private tuition
Dennison, R.H. *al.*
Skerry's Coll., Newcastle-on-Tyne
Jones, R.J. Gram. and Coll. S., Carnarvon
Lloyd, G.C.
Northgate S., Bury St. Edmunds
Wightwick, N.T. Bethany H., Goudhurst

Hersey, G.B. Sutton Park S., Sutton
Hosking, C.B.
St. James the Great S., Keyham, Devonport
Roberts, V.A. Ruthin Grammar S.
Stonham, F.K. Bethany H., Goudhurst
Trappes, J.H. St. George's Coll., Weybridge
[1]Vincent-Brown, C.
St. George's Coll., Weybridge

Cohen, J. Central High S., Leeds
Collier, C. Brunt's Tech. S., Mansfield
Ellis, C.O. Froebel H., Devonport
Fitch, J.T. Private tuition
Robinson, C.C. Newquay College

Baird, T.J. St. George's Coll., Weybridge
Bedford, C.M.
Montrose Coll., Streatham Hill
Blakeman, J.G.F. *al.* Westoe Secondary S.
Langford, C.N.
St. Michael's Coll., Notting Hill
Mason, A.G. Private tuition
Savage, H.A.
Montrose Coll., Streatham Hill
Williamson, E.F.
Humberstone Foundation S., Clee
Wilson, C. Upholland Gram. S., Orrell
Wilton, C. Blundell's S., Tiverton
Zepero, H. *f.* St. Joseph's Coll., Dumfries

Cochrane, D.W. St. John's Coll., Brixton
Pearmund, A.S.
Cusack's Coll., Broad St. Place, E.C.
Raley, R.A.
Higher Council S., West Bridgford

Hancock, F. Private tuition
Hoare, J.M.
Hillmartin Coll., Camden Road, N.W.
Nunneley, W.B.
The Modern S., East Grinstead
Wongse, Private tuition

Broel, W.
Municipal Secondary S., Harrogate
Hamilton, H. Tynemouth School
Henri, F.
Streatham Coll., Streatham Common
[1]Iron, D. Tudor Hall, Hawkhurst
Phillips, C.R. Arvon H., Colwyn Bay
Samwell, F.N.F. Private tuition

Braga, E.L. St. George's Coll., Weybridge
Cockbain, B. Keswick S., Cumberland
[1]Cope, P.T. Private tuition
Edwards, T.C. Ruthin Grammar S.
Haiselden, W. Private tuition
Thompson, S. Endcliffe Coll., Sheffield
Wyllie, D.S. Bethany H., Goudhurst

Ashbridge, T. Nelson S., Wigton
Brooks, L.C. Private tuition
Hare, J.T. 36 Stapleton Hall Road, N.
Potter, C.T. Froebel H., Devonport
Roberts, W.S. Private tuition
Sanders, H.J.
Central Commercial S., Bristol

Cardona, H. Christian Bros.' Coll., Gibraltar
Farnworth, A.
Seven Thorns S., Hr. Openshaw
Hall, H.W. Private tuition
Harries, H.R. Ferndale Secondary S.
Marshall, A.R.L. Private tuition
McLaine, T.E. Private tuition
Wallis, A.B. Tynemouth School

Bilham, S.J. Bracknell College
Burton, A. Private tuition
[1]Davies, T. County S., Whitland
Ewen, A. St. Joseph's Coll., Dumfries
Gadsby, O.S.
Queen Mary's Gram. S., Walsall
Williams, N.A.
Montrose Coll., Streatham Hill
Wood, F.L. Bethany H., Goudhurst

Barker, J.P. *d.* Private tuition
Clery, A.A. All Saints' Choir S., Clifton
Dalby, F.B. Ipswich School
Hayward, H.W. Private tuition
Sowden, F.E. *a.al.* Private tuition

Hancock, O.L. Newquay College
Longdin, J.S. Private tuition
Martin, C.R. New Coll., Herne Bay

THIRD CLASS.

Honours Division.

Geldens, L.J. *a.al.f.du.*
St. Aloysius' Coll., Hornsey Lane, N.
Pla, F. *f.sp.* St. Joseph's Coll., Beulah Hill
Soriano, J. *e.a.f.sp.d.*
Christian Bros.' Coll., Gibraltar
Cardona, E. *l.a.sp.*
Christian Bros.' Coll., Gibraltar
Viaplana, R. *sp.d.*
St. Joseph's Coll., Beulah Hill
Pieterhous, R.F. *f.*
St. Aloysius' Coll., Hornsey Lane, N.
Dotto, Alfred *e.bk.f.sp.*
Christian Bros.' Coll., Gibraltar
Clark, L. *sp.* St. Joseph's Coll., Dumfries
Clark, W. *al.sp.* St. Joseph's Coll., Dumfries
Flower, F.G. *s.e.a.al.gm.f.l.*
Richmond Hill S., Richmond

Guillier, J.F. *f.*
St. Aloysius' Coll., Hornsey Lane, N.
Payne, G W. *e.f.*
St. Aloysius' Coll., Hornsey Lane, N.

Quintana, I. *sp.*
St. Joseph's Acad., Kennington Rd., S.E.
Martins, L. *f.d.*
St. Joseph's Coll., Beulah Hill
Delbanco, J.R. *e.a.al.f.*
University S., Southport
Dotto, Augustine *e.bk.f.*
Christian Bros.' Coll., Gibraltar
Guillemard, R.A. *a.f.d.* Gram. S., Taplow
Chipulina, J. *sp.d.*
Christian Bros.' Coll., Gibraltar
Hernandez, J. *e.a.d.*
Christian Bros.' Coll., Gibraltar
Mifsud, B. *e.*
Christian Bros.' Coll., Gibraltar
Schofield, B. *s.e.a.al.*
University S., Southport
Potts, W.J. *e.a.al.f.l.*
Rothbury, St. Leonards-on-Sea

Klupfel, P.A. *ge.*
St. Aloysius' Coll., Hornsey Lane, N.
Marriott, N.F. *e.al.f.*
Broadgate S., Nottingham
Tiber, E.L. *a.al.* University S., Rochester

Hall, H.P. *e.a.*
Osborne High S., W. Hartlepool
Elliott, S.R. *e.a.* University S., Southport

Coxe, A.G. *al.d.*
Christian Bros.' Coll., Gibraltar
George, M. *a.al.gm.*
Pentre Hr. Elementary S.
Griffin, E. *e.sp.*
Christian Bros.' Coll., Gibraltar

Lidington, N.H.O. *h.g.gm.*
Milton Coll., Bexley Heath

Anton, M. *sp.* St. Joseph's Coll., Dumfries
Darrah, H. *h.g.a.al.*
Mount Radford S., Exeter
Glanville, A.P. *e.a.al.*
Stoke Public Hr. S., Devonport
Gomez, E. Christian Bros.' Coll., Gibraltar
Hulme, H. *e.al.* Grammar S., Eccles
Sellier, R. *bk.f.d.*
Marist Brothers' Coll., Grove Ferry

d'Anthouard, J. *f.*
St. Joseph's Acad., Kennington Rd., S.E.

Easte, J.P. *al.gm.* New Coll., Herne Bay
Urgoti, J.N. *a.al.sp.*
St. Aloysius' Coll., Hornsey Lane, N.

Davies, I.R. *a.w.sc.*
Pentre Hr. Elementary S.
Marinier, J. *bk.f.*
Marist Brothers' Coll., Grove Ferry

Avila, F. *sp.* St. Joseph's Coll., Dumfries
Coleman, H.F.W. *e.gm.*
Stoke Public Hr. S., Devonport
Croke, L.F. *al.gm.*
St. Joseph's Acad., Kennington Rd., S.E.
Hichens, E.B. *e.d.*
Northgate S., Bury St. Edmunds
Peckett, R.F. *s.e.a.*
University S., Southport
Robson, A.R. *s.al.*
Montrose Coll., Streatham Hill

Lamont, E.W. *s.e.al.*
University S., Southport
Lawrence, C.A. *al.* University S., Rochester

Armer, T. The College, Weston-s.-Mare
Dutton, C.A. *e.al.l.*
Hawkesyard Coll., Rugeley
Lee, E.A. *s.al.* University S., Southport
Owen, H.S. *f.* Upholland Gram. S., Orrell

Barker, F. *e.a.l.* Hawkesyard Coll., Rugeley
Thomas, W.R. *a.* Pentre H. Elementary S.
Westlake, H.J.W.J. *e.al.*
Stoke Public Hr. S., Devonport

Hiller, C.B. *al.* St. John's Coll., Brixton
Taylor, A.E. *a.al.d.*
Advanced Elem. Boys' S., Merthyr Tydfil
Wilkinson, F. *al.* Argyle H., Sunderland

Bartram, L.H. *a.*
Broadgate S., Nottingham
Pownall, C.H. *a.* Ruthin Gram. S.

Blunden, E.C. *e.f.*
Cleave's Endowed S., Yalding
Bowden, A.J. *e.* Porth Hr. Grade S.
Decrême, H. *bk.f.*
Marist Brothers' Coll., Grove Ferry
Montes, O. *f.sp.*
Summerleaze Coll. S., East Harptree
Williams, R. Pentre Hr. Elementary S.

Barkby, H. *e.al* University S., Southport
Boothroyd, A. *s.e.*
Fartown Gram. S., Huddersfield
Friend, O.F. *e.a.d.*
Stafford Coll., Forest Hill
McConnell, W.A. *e.al.*
St. Joseph's Coll., Dumfries
White, V.C.W. *e.a.al.*
Stoke Public Hr. S., Devonport

Beattie, C. *a.ma.* Belle Vue H., Greenwich
Featherstone, A.G. *a.al.*
Cleave's Endowed S., Yalding
Standford, W.C. *a.al.*
Stoke Public Hr. S., Devonport

Carne, F.J.V. *e.*
Stoke Public Hr. S., Devonport
Davis, W.E. *f.* Argyle H., Sunderland
Holland, E. *e.al.* St. Joseph's Coll., Dumfries
Howard, W. *l.* Hawkesyard Coll., Rugeley
Ogden, J.H. *e.* St. Joseph's Coll., Dumfries
Owen, C.W. *s.* Battle Hill S., Hexham

Davies, P. *a.* Pentre Hr. Elementary S.
Kernick, O. *a.al.* Newquay College
Morales, H. Christian Bros.' Coll., Gibraltar
Smylie, D. Grammar S., Eccles
Wanless, R.P. *e.* Newcastle Modern S.

Durante, B. *sp.*
Christian Bros.' Coll., Gibraltar

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BOYS, 3RD CLASS, HONS.—*Continued.*

Lamerton, L.H. *e.* Stoke Public Hr. S., Devonport
Taylor, H. *e.* The College, Weston-s.-Mare

Catnach, C.B. *a.al.* Newcastle Modern S.
Davies, J.E.A. *e.l.* Ruthin Grammar S.
Dillecate, H. *e.* MiddleClassS., Stalybridge
Gibson, J. *d.* University S., Rochester
Holmes, S.H. *a.al.* Stoke Public Hr. S., Devonport
Kelly, B. *al.* St. Joseph's Coll., Beulah Hill
Sheldon, G.A. Milton Coll., Bexley Heath
Webb, J.N. StokePublic Hr. S., Devonport

THIRD CLASS.

Pass Division.

[2]Gallardo, M. *f.sp.* St. Joseph's Coll., Dumfries
[2]Willcox, H.A. Pentre Hr. Elementary S.

[2]Moore, G.F. *f.it.* St. George's Coll., Weybridge
[2]Gache, G. *sp.d.* Christian Bros.' Coll., Gibraltar
[2]Black, T. St. Joseph's Coll., Dumfries
[2]Gubbins, E.J. St. Aloysius' Coll., Hornsey Lane, N.
[2]Collins, R.J. Commercial S., Littlehampton
[2]Lowndes, D.B. Grammar S., Eccles
[2]Thorrowgood, R.W.T. Grammar S., Chichester
[2]Dotto, L.E. Christian Bros.' Coll., Gibraltar
[2]Edwardes-Evans, J. Ringsway Vicarage, Altrincham
[2]King, T.F. Grammar S., St. Ives

[2]Green, W.P. Private tuition
[2]Taylor, H.I. Grammar S., Ealing

[2]Phillips, H. Training Coll. Model S., York

[2]Catten, H. Montrose Coll., Streatham Hill
[2]Day, H.R.D. Grammar S., Taplow
[2]Ritchie, J.H. Newcastle Modern S.

[2]Roach, R.F.C. Hoe Gram. S., Plymouth
[2]Banks, P. Brunt's Tech. S., Mansfield

[2]Bedford, A. Newcastle Modern S.
[2]Crampin, E.H. *g.* Private tuition

[2]Byrne, N. St. Joseph's Coll., Dumfries
[2]Evans, B.L. Porth Hr. Grade S.
[2]Girling, J.R. Eastward Ho ! Coll., Felixstowe
[2]Harrison, W. Eastward Ho ! Coll., Felixstowe

[2]Doyle, H.J. St. Joseph's Coll., Dumfries

[2]Beckwith, F.W. Lancaster Coll., West Norwood
[2]Cleaver, C.L. St. Catherine's Coll., Richmond

[2]Dowswell, V. Dudley H., Lee
[2]Watson, J.O. Endcliffe Coll., Sheffield

[2]Jones, R.G. Grammar S., Taplow
[2]Milnes, A.H. New Coll., Herne Bay

Austin, G. *a.* Private tuition
Balderrama, C. St. Joseph'sColl., Dumfries
[2]Helsby, R.G. Ruthin Grammar S.
[2]Lewis, M.R. Adv. Elem. Boys' S., Merthyr Tydfil
Palmer, C.J. *al.* Stoke Public Hr. S., Devonport
Parry, J. *a.al.* Adv. Elem. Boys' S., Merthyr Tydfil
Rundle, H.L. *al.* Stoke Public Hr. S., Devonport
[2]Sarjeant, H.S. Bridgnorth Gram. S.
Sully, A.V. *e.f.* Lindisfarne Coll., Westcliff-on-Sea

Alaux, G. Marist Brothers' Coll., Grove Ferry
Burns, B. *al.* St. Boniface's Coll., Plymouth
[2]Capper, T.J. St. Aloysius' Coll., Hornsey Lane, N.
Clark, F. *e.* Osborne HighS., W. Hartlepool
[2]Davies, D.B. Christ Church Elem. S., Southport
Dean, H.R. *e.* Gram. S., Eccles
Dwyer, H.F. St. Aloysius' Coll., Hornsey Lane, N.
Fessard, G. *f.* Marist Brothers' Coll., Grove Ferry
[2]Hennessy, C.J. St. George's Coll., Weybridge
Hill, S. *e.* Newtown S., Waterford
Hunter, J.E. *s.e.d.* Battle Hill S., Hexham
Penwarn, R.J. Stoke Public Hr. S., Devonport
Soulsby, W. Newcastle Modern S.
Williams, F. *al.* Adv. Elem. Boys' S., Merthyr Tydfil
Wright, W.L. *al.* Cleave's S., Yalding

Fairclough, F. Upholland Gram. S., Orrell
Giles, W. *a.* University S., Rochester
Kilkenny, E.A. *a.al.* St. Aloysius' Coll., Hornsey Lane, N.
Marks, W.L. *d.* Stoke Public Hr. S., Devonport
[2]Pragnell, A.R. Bethany H., Goudhurst
Walker, C.H. *e.d.* Osborne High S., W. Hartlepool
Wilkes, G. *a.* Porth Hr. Grade S.

Hall, G.A. *e.al.l.* Hawkesyard Coll., Rugeley
[2]James, J.W.B. Springfield Coll., Acton
Lazzeri, E. St. Joseph's Coll., Beulah Hill
Welch, H. Grammar S., Eccles
Williams, W.J. *a.al.w.* Pentre Hr. Elementary S.

[2]Balfre, A.A. St. Aloysius' Coll., Hornsey Lane, N.
Cazet, C. *f.* Marist Brothers' Coll., Grove Ferry
Dockerty, R. *al.* St. Joseph's Coll., Dumfries
Facio, A. Christian Bros'. Coll., Gibraltar
Guitta, I.M. Bethany H., Goudhurst
[2]Highton, L.R. Christ Church Elem. S., Southport
[2]Kelly, W. Bethany H., Goudhurst
Morelli, L.A. *a.al.gm.* Grammar S., Taplow
Walton, J.B. Battle Hill S., Hexham

[2]Anderson, W.G. Springfield Coll., Acton
Boucher, A.A. St. Aloysius' Coll., Hornsey Lane, N.
Davies, D.D. *a.* Adv. Elem. Boys' S., Merthyr Tydfil
Hill, A.A.F. Stoke Public Hr. S., Devonport
Hooper, J. *al.d.* Stoke Public Hr. S., Devonport
Luton, B.G. All Saints' Choir S., Clifton
Mace, C.A. *a.* University S., Rochester
Martin, C.A. Summerleaze Coll. S., East Harptree
Peek, R.E. Stoke Public Hr. S., Devonport
Tucker, G.H.S. Summerleaze Coll. S., East Harptree
White, H. *s.e.* Newtown S., Waterford
Willis, F.W. *a.al.* Stoke Public Hr. S., Devonport
Wood, H.L. *al.* University S., Southport

de Quiros, C. *f.* Marist Brothers' Coll., Grove Ferry
Macdonald, W.K. *al.* University S., Southport
McConnell, F.e. St. Joseph'sColl., Dumfries
Osborne, D.A. Wilson Coll., Stamford Hill, N.
[2]Paddock, W.G. Grammar S., Ealing
Paine, R.E. Stoke Public Hr. S., Devonport
Richardson, A. *a.gm.* Wilton House Coll., Walsall
Standford, V.H. Stoke Public Hr. S., Devonport
[2]Thomas, M.H. Porth Hr. Grade S.
Thomas, W.O. *w.* Pentre Higher Elem. S.
[2]Williams, I.B. Pencader Gram. S.
[2]Wilson, A.J. Froebel H., Devonport

Griggs, S.J. *a.* WilsonColl., StamfordHill, N
Lewis, H. Newtown S., Waterford
Mortimer, W.C. St. Aloysius' Coll., Hornsey Lane, N.
Purdy, H. *d.* Grammar S., Eccles
Williams, J.S. *d.* Pentre Higher Elem. S.

[2]Bastin, S.S.R. Milton Coll., Bexley Heath
Border, S.A. StokePublicHr.S., Devonport
Doland, C.A. St. Aloysius' Coll., Hornsey Lane, N.
Easter, C.E. *d.* Northgate S., Bury St. Edmunds
[2]Hooper, E.T. Grammar S., Ealing
Llewellyn, R.C. *a.* Porth Hr. Grade S.
[2]Mullings, F.G. *d.* Poly. Comm. Secondary S., Regent St., W.
Ramage, G.E. *al.* St. Joseph's Acad., Kennington Rd., S.E.
Taplin, W. *a.d.* Private tuition
Wildish, J.N. *a.* University S., Rochester
[2]Wilson, T.H. *bk.* New Coll., Herne Bay

Bate, P.I. St. Joseph's Coll., Dumfries
[2]Callow, H.E. Tudor Hall, Hawkhurst
Dormer, P. Newtown S., Waterford
Ellison, B. *al.* St. Joseph's Coll., Dumfries
George, V. Stoke Public Hr. S., Devonport
[2]Gittens, S.F. Grammar S., Taplow
[2]Gooch, R.F. New Coll., Herne Bay
[2]Gunn, F.H.W. Newcastle Modern S.
[2]Ham, W.C. Brighton Grammar S.
[2]Scott, E.D. Northgate S., Bury St. Edmunds
Singleton, P.J. University S., Southport
Steward, D.H. *e.* New Coll., Herne Bay

Allen, A.L. *a.al.* Tutorial S., Penarth
Kallend, R.W. Milton Coll., Bexley Heath
[2]Kenward, H.L. Tudor Hall, Hawkhurst
[2]McCluskey, P. St. Joseph'sColl., Dumfries
Muschamp, J.D. Osborne High S., W. Hartlepool

Owen, L.C. *a* Stoke Public Hr. S., Devonport
[2]Powell, E.H. Christ Coll., Brecon
Roff, E.A. Private tuition

Askew, A.W. University S., Southport
Bloomfield, A.W. St. Joseph's Acad., Kennington Rd., S.E.
[2]Fenn, H.T. Hillmartin Coll., Camden Road, N.W.
Hardiman, M. *d.* St. Joseph's Coll., Dumfries
Heads, P. *a.al.f.* Newcastle Modern S.
Hughes, C.R. *e.* St. George's Coll., Weybridge
[2]Jones, J. Adv. Elem. Boys' S., Merthyr Tydfil
Simmons, F.L. Grove H., Highgate
Thomas, Ebenezer Porth Hr. Grade S.
Wildsmith, L.F. *e.a.* St. Joseph's Coll., Dumfries

Agnew, A.P. *s.* University S., Southport
Argles, E.V. *e.al.l.* New Coll., Herne Bay
[2]Coles, T. St. Boniface's Coll., Plymouth
Eddowes, H. *al.* University S., Southport
[2]Evans, F.G. Ruthin Grammar S.
[2]Hargreaves, C.G. Rusholme High S., Manchester
Lakey, E.H. Stoke Public Hr. S., Devonport
[2]Minvalla, J.E. Sholing Coll., Woolston
Osborne, G.H. *a.d.* Fartown Gram. S., Huddersfield
Roberts, J.M. *d.* St. Joseph's Coll., Dumfries

Dupont, R.H. Northgate S., Bury St. Edmunds
Fauchaut, M. Marist Brothers' Coll., Grove Ferry
[2]Gardiner, B.G. Eastward Ho ! Coll., Felixstowe
Kingsbury, D. *a.sc.* Upholland Gram. S., Orrell
Marshall, H. Grammar S., Eccles
O'Shea, D.T. St. Aloysius' Coll., Hornsey Lane, N.
[2]Parsons, H. Poly. Comm. Secondary S., Regent St., W.
Smith, C. *al.* Ruthin Grammar S.
[2]Sousa, G.A. *f.* St. Georges' Coll., Weybridge
Unsworth, J. St. Joseph's Coll., Dumfries
Wilson, R.J. StokePublicHr.S., Devonport

Durrant, R.A. Lindisfarne Coll., Westcliff-on-Sea
Hoskins, S.C. Laugharne S., Southsea
Kelly, J.P. St. Joseph's Coll., Dumfries
Kemp, C.H. MontroseColl., StreathamHill
[2]Sunderland, V.L. Private tuition
Thomas, Eirwyn, *e.* Porth Hr. Grade S.
Wright, A. St. Joseph's Coll., Dumfries

Bentall, W.D. Lindisfarne Coll., Westcliff-on-Sea
[2]Bromley, C.J. New Coll., Herne Bay
Davies, D.F. Porth Hr. Grade S.
Diesch, H.F. St. Aloysius' Coll., Hornsey Lane, N.
Donnelly, T. *e.* St. Joseph'sColl., Dumfries
Fletcher, J. *d.* Wigton School
Hill, T.G. Tollington Park College, N.
Keane, J. *a.* St. Joseph's Acad., Kennington Rd., S.E.
Morgan, D.B. The College, Weston-s.-Mare
Neary, H. *l.* Conv. La Sainte Union, Banagher
Palmer, J. *s.* Wigton School
Phillips, J. Stoke Public Hr. S., Devonport
Plunkett, H.J. *d.* St. Aloysius' Coll., Hornsey Lane, N.
Rees, I. Pencader Grammar S.
Stobbart, J.A. Newcastle Modern S.
Thornton, W.J. St. Joseph's Coll., Dumfries
[2]Toole, R.W. St. Aloysius' Coll., Hornsey Lane, N.
Wedderburn, J.R. *a.* Newcastle Modern S.

Aird, M. St. Joseph's Coll., Dumfries
Andrews, A.W. *e.* Stoke Public Hr. S., Devonport
Betts, S. *a.* The College, Weston-s.-Mare
[2]Cobb, L.L. New Coll., Herne Bay
Forbes, A. Newtown S., Waterford
[2]Forder, F.G. Ruthin Grammar S.
Glendening, V.H. *f.* Arlington Villa S., Brighton
Golden, J.D. St. Joseph's Coll., Dumfries
Horton, S.H. All Saints' Choir S., Clifton
MacDonald, C.G.P. St. Aloysius' Coll., Hornsey Lane, N.
[2]Mackay, T.H. *sp.* St. George's Coll., Weybridge
[2]Midgley, J.H. TheCollege, Weston-s.-Mare
Parry, E.E. *a.* Ruthin Grammar S.
[2]Sanders, G.T. The Modern S., East Grinstead
Story, J.E. *a.* Ruthin Gram.mar S.
Warren, J.A. *e.* Montrose Coll., Streatham Hill
[2]Weeks, G.G. BrondesburyColl., Willesden Lane, N.W.

Chew, S. St. Joseph's Coll., Dumfries
Etherington, E.T. St. Aloysius' Coll., Hornsey Lane, N.

Fogarty, L. *e.l.* Conv. La Sainte Union, Banagher
Haddock, W. Argyle H., Sunderland
Hawksley, R.G. *s.* UniversityS., Southport
Herivel, H.L. Lindisfarne Coll., Westcliff-on-Sea
Jacka, H.T. *f.* Argyle H., Sunderland
[2]Rant, W.E. Culham Coll. S., Abingdon
Wade, C.E. Lindisfarne Coll., Westcliff-on-Sea
[2]Wood, W.T. Catholic Gram. S., St. Helens
Wright, H.O. *d.* Belle Vue H., Greenwich

Absalom, D. *w.* Porth Hr. Grade S.
Bloomfield, R.S. *g.* Northgate S., Bury St. Edmunds
[2]Cicognani, H.R. Bethany H., Goudhurst
Coyle, T. Hawkesyard Coll., Rugeley
Dodson, J.P. St. Joseph's Acad., Kennington Rd., S.E.
Fish, A.W. *a.* New Coll., Herne Bay
[2]Ragheb, M.S. North Devon S., Barnstaple
Scantlebury, T.F. Stoke Public Hr. S., Devonport
Welch, J. St. Joseph's Coll., Dumfries
[2]Wilson, S.W. Wigton School

Batchelor, C.E.R. Osborne High S., W. Hartlepool
Clark, W.V. Upholland Gram. S., Orrell
Dalgliesh, D. Eastward Ho ! Coll., Felixstowe
Dolbeau, L. *f.* Marist Brothers' Coll., Grove Ferry
Hunter, R.C. Lindisfarne Coll., Westcliff-on-Sea
Jenkins, W.H. Adv. Elem. Boys' S., Merthyr Tydfil
[2]Pullen, J.R. St. John's Coll., Brixton

Angle, F.W. StokePublicHr.S., Devonport
Bond, A. *a.* Adv. Elem. Boys' S., Merthyr Tydfil
Buckeridge, W.H. St. George's Coll., Weybridge
Cook, J.W. University S., Southport
Farrance, D.A. *s.* The Modern S., East Grinstead
Gallop, E. Tollington Park College, N.
Lamb, A.R. *d.* Wigton School
Osborn, H.H.E. Fartown Gram. S., Huddersfield
Rogers, N.A. TheModernS., EastGrinstead
Ross, E.M. St. Aloysius' Coll., Hornsey Lane, N.
Schneider, P. *f.* Marist Brothers' Coll., Grove Ferry
Taylor, A.S. Barry Comm. Acad.

Broadhead, E.V. Manor S., York
Crompton, T. *e.* Grammar S., Eccles
[2]Doust, R.F. CommercialS., WoodGreen, N.
Duguid, J.B. Wigton School
Dupont, E.C. Northgate S., Bury St. Edmunds
Elliott, A.E. Newcastle Modern S.
Jelly, H.R. *d.* The College, Weston-s.-Mare
Jones, J.P. *a.al.* Pencader Grammar S.
Myers, G. Stoke Public Hr. S., Devonport
[2]Owen, T.E.W. Grammar S., Taplow
Roberts, C.J. *a.* Buckingham Place Acad., Portsmouth
Robinson, C. *d.* L.C.C. School for the Deaf, Anerley
Scrivener, J. Upholland Gram. S., Orrell
Wakefield, P. *e.* Newtown S., Waterford
Wise, A.A. *a.* New Coll., Herne Bay

Bell, G.B. Gresham Coll., Southsea
Burnside, E.E. *e.* Princess Gardens S., Belfast
[2]Byers, E.R. Heanor Technical S.
[2]Clifton, R.P. Tudor Hall, Hawkhurst
French, H.A.G. Grammar S., Taplow
Isaacs, F.L. St. Aloysius' Coll., Hornsey Lane, N.
[2]Jode, S.E. Lancaster Coll., West Norwood
Jones, H.R. University S., Rochester
Morris, H.P. Ruthin Grammar S.
Peile, H.A. Wigton School

Allen, R.H.F. Tutorial S., Penarth
Andrews, H. *e.* Froebel H., Devonport
Barlow, G.B. Richmond Hill S., Richmond
Berry, R.B. Grammar S., Eccles
Bodenham, N.H. *a.d.* The College, Weston-s.-Mare
[2]Bourne, E.W. Bethany H., Goudhurst
Lloyd, W.M. *al.* Ruthin Grammar S.
Marsh, B.C. Richmond H., Handsworth
[2]Thomas, T.O. Pencader Grammar S.
Tovey, J.O. Melbourne Coll., Anerley
White, G. *al.* Newquay College

Bettle, H.W. Osborne High S., W. Hartlepool
Buchanan, B.R. Westbourne Rd. Preparatory S., Sheffield
Dowding, H.N. *a.* The College, Weston-s.-Mare
Hemmens, A.E. *al.* Stoke Public Hr. S., Devonport
Jones, H.D. *al.* Adv. Elem. Boys' S., Merthyr Tydfil
Moore, E.L. *al.* Newcastle Modern S.
Stewart, K.A. Bethany H., Goudhurst

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BOYS, 3RD CLASS, PASS—*continued*

²Teague, S. Christ's Coll., Blackheath
Tresidder, W.D. Orient Coll., Skegness
Willmott, P.E. University S., Rochester

Benham, M.E. *al.* Stafford Coll., Forest Hill
²Berry, H.G. Private tuition
Byrne, B. St. Joseph's Coll., Dumfries
Crundall, E.D. *a.d.* Tudor Hall, Hawkhurst
Flanagan, R.J. *a.*
St. Joseph's Acad., Kennington Rd., S.E.
Gibson, W.R. *s.* Argyle H., Sunderland
Heather, H. *e.* Newtown S., Waterford
Kinnear, G.P. Newcastle Modern S.
Thornton, F.R. *a.* New Coll., Herne Bay
Todd, L.M. Scorton Grammar S.
²Walker, H. Private tuition

Armstrong, P.R.
St. Joseph's Coll., Dumfries
Bryant, H.C. *e.g.*
The College, Weston-s.-Mare
Ewen, A. *a.* St. Joseph's Coll., Dumfries
Farkas, R.G.E.A. Grammar S., Taplow
Gilbert, G. Orient Coll., Skegness
Holland, J. Grammar S., Eccles
Matthews, M. *e.* Grammar S., Eccles
Morley, G.H. Manor S., York
²Roberts, C.R.
Hillmartin Coll., Camden Rd., N.W.
Stout, J.A. Wigton School
Walton, W. *f.* Newcastle Modern S.
Wilson, W.R. Argyle H., Sunderland

²Bridges, H.
Northgate S., Bury St. Edmunds
Darrah, N. Mount Radford S., Exeter
Furness, G.G. Orient Coll., Skegness
Jones, I.R. Porth Hr. Grade S.
²Lander, T.
Chadsmoor National S., Cannock
Maggs, S.C.W.
Forest Gate High S. & Comm. Coll.
Miller, C.G. University S., Rochester
Monk, C.L. Richmond Hill S., Richmond
Sandeman, R.F. Arlington Villas S., Brighton
²Shaw, L.H. Grammar S., Ealing
²Vicarey, R. Commercial S., Wood Green, N.

Featherstone, M. Christ's Coll., Blackheath
Hammond, N.L. St. Ronan's, Tankerton
Mitchell, H.L.
Adv. Elem. Boys' S., Merthyr Tydfil
Nightingale, F. Gram. S., Taplow
²Pascoe, S.S. Newquay College
Waight, H.
Hillmartin Coll., Camden Rd., N.W.
Williams, W.J.
Adv. Elem. Boys' S., Merthyr Tydfil

Greatorex, H.J. Newbury Park, Ilford
Johnstone, J.I. Private tuition
Jones, M.I.
Adv. Elem. Boys' S., Merthyr Tydfil
Parker, V.G. All Saints' Choir S., Clifton
Payne, E.M. Balham School
Wood, W.S.J.
Fartown Gram. S., Huddersfield

Douglas, H.M. *l.*
Hawkesyard Coll., Rugeley
Henneguy, J.C.
St. Aloysius' Coll., Hornsey Lane, N.
Langridge, F.
The Modern S., East Grinstead
Nanscawen, W.L.
Stoke Public Hr. S., Devonport
O'Neill, A.G.
St. Aloysius' Coll., Hornsey Lane, N.
Reveley, E.O. Ruthin Grammar S.
Rowden, E.E. *al.* New Coll., Herne Bay
Tansley, L.R.H. Broadgate S., Nottingham
Tapp, R.T. The College, Weston-s.-Mare
Whelan, T. St. Joseph's Coll., Dumfries

Brown, C. Warner's Coll., Richmond
Brown, J.M. Grammar S., Ealing
Cooper, W. Orient Coll., Skegness
Edwards, W.A. *al.*
Stoke Public Hr. S., Devonport
²Hunter, G.
Poly. Comm. Secondary S., Regent St., W.
Jackson, D. Le J. Newcastle Modern S.
Kennett, H.H. Manor S., York
May, F.C. Bethany H., Goudhurst
McQuillin, F. St. Joseph's Coll., Beulah Hill
Newson, F.N.
Eastward Ho! Coll., Felixstowe
Reynolds, D.G. Margate College
Roberts, H.J. St. George's Coll., Weybridge
²Simpson, E. St. L.
Lewisham S., Weston-s.-Mare
Sumner, F. Upholland Gram. S., Orrell
Wilson, N. New Coll., Herne Bay

Booth, E.W.E.
High S. for Boys, Upper Hornsey Rise, N.
Flynn, M. St. Joseph's Coll., Dumfries
Girling, F.V. Eastward Ho! Coll., Felixstowe
McCorry, A.C. St. George's Coll., Weybridge
Medd Hall, R.G.
Valentia H., South Norwood
²O'Callaghan, E.
St. Boniface's Coll., Plymouth
Roberts, T.A. *e.* Endcliffe Coll., Sheffield
Robson, D.S. St. Joseph's Coll., Dumfries
Scanlan, J.W.
Hillmartin Coll., Camden Rd., N.W.
Turner, E.E. Stafford Coll., Forest Hill
Walton, E. University S., Southport
Winter, B.F.C.
Eastward Ho! Coll., Felixstowe

Archer, A.W. *a* Balham School
Bacon, G.D. Tudor Hall, Hawkhurst
²Cross, H.W.
Northgate S., Bury St. Edmunds
Hyde, G. Grammar S., Ealing
Neal, E.J.M. Margate College

Boon, N.A. University S., Rochester
²Brown, T.F.M. Tynemouth School
Crew, W.A. Grammar School, Taplow
Danks, G. St. John's Coll., Brixton
Griffiths, O.
Adv. Elem. Boys' S., Merthyr Tydfil
Grimish, B. Margate College
²Hughes, H. Ferndale Secondary S.
Johnson, A.A.
The Modern S., East Grinstead
²King, E.
Northgate S., Bury St. Edmunds
²Renton, L. 36 Stapleton Hall Road, N.
Sacksen, J.A. St. George's Coll., Weybridge
Shanley, G.H. St. Joseph's Coll., Dumfries
²Simmons, H.O.
The Hermitage S., Grimsargh
²Steers, H.A.M. Private tuition

Bavin, J.D. Grammar S., Taplow
Boles, F. St. Joseph's Coll., Dumfries
Evans, J.C. Porth Hr. Grade S.
Hancock, R.A. Stafford Coll., Forest Hill
Heaton, P. Upholland Gram. S., Orrell
Lichtenberg, E. Tollington Park College, N.
Moore, A.J. Balham School
Mould, G.A. St. Joseph's Coll., Dumfries
Müller, A.U. *l.*
Hillmartin Coll., Camden Road, N.W.
Sadler, H. Tutorial S., Penarth
Stockwell, W. Gram. S., Eccles
Swarbrick, H. St. Joseph's Coll., Dumfries
Welton, C.W.
Lindisfarne Coll., Westcliff-on-Sea

²Andrews, H.G.
Brondesbury Coll., Willesden Lane, N.W.
Best, S.B. The Modern S., East Grinstead
Campbell, F. St. Joseph's Coll., Dumfries
²Cleeton, A.J.
West Hill Council S., Hednesford
Cooper, W.S.G.
Montrose Coll., Streatham Hill
Cranfield, F.L. University S., Southport
Dean, N.E. The Modern S., East Grinstead
Edwards, J.M. New Coll., Herne Bay
Farmer, E.C.
St. Aloysius' Coll., Hornsey Lane, N.
²German, J.A. Private tuition
Givens, M. St. Joseph's Coll., Dumfries
Huggett, F.G.
Fartown Gram. S., Huddersfield
Lennox, W. St. Joseph's Coll., Dumfries
Munro, H.D. *a.* Newcastle Modern S.
Snowden, C.N. Orient Coll., Skegness
Steel, J. Private tuition
Stephenson, J. Wigton School
Turner, S.L.
Lindisfarne Coll., Westcliff-on-Sea

Brooks, H.
L.C.C. School for the Deaf, Anerley
Bungard, L.W. Egham High School
Fells, J.H. New Coll., Herne Bay
Hammond, W.E. University S., Rochester
Maher, V. St. Joseph's Coll., Dumfries
Reardon, J.J. St. Joseph's Coll., Dumfries
Reason, A.G.
St. Peter's Church S., Bayswater

Ameen, M.H. Gram. S., Taplow
²Christopher, E.O. Newquay College
²Edwards, W.G. Catford Coll. S., Lewisham
Finlay, C.B.
Courtenay Lodge, Sutton Courtenay
Fisher, A.W. Richmond Hill S., Richmond
²Gordon, W. St. Joseph's Coll., Dumfries
Jackson, E. *a.* Wigton School
Marshall, C.R. Bethany H., Goudhurst
²Smith, C.T. Montrose Coll., Streatham Hill

Banton, F. *a.* Durham H., Hove
Bruce, J.Q. New Coll., Herne Bay
Flynn, T. St. Joseph's Coll., Dumfries
Grey, C. *d.* Salesian S., Battersea
Hughes, W.H.
Lindisfarne Coll., Westcliff-on-Sea
Tolley, W. St. Joseph's Coll., Beulah Hill
Westacott, R.C. Grove H., Highgate
Williams, A. Newquay College

Boniface, R.J. Bethany H., Goudhurst
Byrne, J.G. St. Joseph's Coll., Dumfries
²Dunkley, J.G. Christ's Coll., Blackheath
Evans, E. Porth Hr. Grade S.
Farr, D.W. *al.* Porth Hr. Grade S.
Griffiths, H.J. St. George's Coll., Weybridge
Mortlock, H.S.
Northgate S., Bury St. Edmunds
Peirce, C.H.N. The College, Weston-s.-Mare
Story, G.B.T. Princess Gardens S., Belfast
White, C. Upholland Gram. S., Orrell
Wilkinson, J.R. Scorton Grammar S.
Woodcock, L. Private tuition

Bishonden, F. St. John's Coll., Brixton
Coffey, J. St. Joseph's Coll., Beulah Hill
Dalez, M.R. Alton H., Blackheath
Edwards, E.G. Orient Coll., Skegness
Foster, J.B. St. Joseph's Coll., Dumfries
Gilmour, J. Intermediate S., Ballyclare
Irvine, G.F.
Courtenay Lodge, Sutton Courtenay
Jones, S.H. Grammar S., Taplow
Malcolm, K.J. Bethany H., Goudhurst
Walker, E. Gram. S., Eccles
Wallace, K. Newcastle Modern School
Warren, F. St. John's Coll., Brixton

Boyle, J. St. Joseph's Coll., Dumfries
Evans, R.R. Margate College
Harnden, E.E. University S., Rochester
Hayes, E. Tutorial S., Penarth
Kemp, J.F. St. Joseph's Coll., Dumfries
Mansford, L.W.
St. Aloysius' Coll., Hornsey Lane, N.
Meredith, W.W.
Adv. Elem. Boys' S., Merthyr Tydfil
Schwabe, C. Tudor Hall, Hawkhurst
Turner, E.T. Stafford Coll., Forest Hill
Wolley, L.F. Margate College

Lumley, D.C. Balham School
Marr, A. Wigton School
Marriott, A. Grammar S., Eccles
Reakes, E.U. The College, Weston-s.-Mare
Tiltman, H.H. Durham H., Hove
Turner, R.C.
Montrose Coll., Streatham Hill

Carleton, K.O'N. Bethany H., Goudhurst
²Collins, J. 62 Lauriston Place, Edinburgh
Pitts, R St. Joseph's Coll., Dumfries
Skeen, J. St. John's Coll., Brixton

Allen, T.
Forest Gate High S. & Comm. Coll.
Banks, P.K. Bethany H., Goudhurst
Birch, T. *h.* Grammar S., Taplow
Collings, J.D. Newcastle Modern S.
²Hall, J.T. Private tuition
Jacobs, M.
Lindisfarne Coll., Westcliff-on-Sea
Mackenzie, R.T. Balham School
Preston, R.A. The Hermitage S., Grimsargh
Simpson, F.A. All Saints' Choir S., Clifton

Bolland, G.E. Scorton Grammar S.
Boyle, P. Royal Crescent S., Margate
²Boys, L.C. Montrose Coll., Streatham Hill
²Drake, C.W.F. Private tuition
Fernandez, F. The Hermitage S., Grimsargh
Smith, H. The Haughton S., York
Stewart, J.M. St. Joseph's Coll., Dumfries

Bell, O. University S., Southport
²Brough, W. St. Luke's S., Leek
Fell, G. Porth Hr. Grade S.
Lambert, S.W. Tutorial S., Penarth
²Langford, H.
Lancaster Coll., West Norwood
Petrie, A. Grammar S., Eccles

Clark, E.S. Alton H., Blackheath
Haimes, J. St. Boniface's Coll., Plymouth
Mace, A. Grammar S., Taplow
Saunders, C.R. Grammar S., Ealing
Williams, A.J. Pencader Grammar S.

Ball, C.W. New Coll., Herne Bay
Durnan, E. St. Joseph's Coll., Dumfries
Hale, W.R. New Coll., Herne Bay
Mossesson, J.
L.C.C. School for the Deaf, Anerley
Pfaff, E. Private tuition
Ramsbottom, R.A.
St. Joseph's Coll., Dumfries
Shanly, L.D.
St. Aloysius' Coll., Hornsey Lane, N.
Sugden, J.E.
Fartown Gram. S., Huddersfield
Wing, C.T. Bethany H., Goudhurst

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CLASS LIST—GIRLS.

(*For list of abbreviations, see page* 336.)

FIRST CLASS [or SENIOR].

Honours Division.

Gain, R.M. *g.f.ph.d.*
Sacred Heart Conv., Barnes
Greenland, M. *e.g.f.d.*
Clark's Coll., Chancery Lane, W.C.
Etches, A.G. *mu.*
The Hiatt Ladies' Coll., Wellington
Armstrong, L.C. *s.g.f.*
Girls' Secondary S., Devonport
Williams, D.C. *e.g.f.do.*
Girls' Secondary S., Devonport

FIRST CLASS [or SENIOR].

Pass Division.

Pickering, M. *e.d.* Wigton School
Christides, P. *f.*
English High S., Pera, Constantinople
Tucker, M. *g.f.do.*
Girls' Secondary S., Devonport
Novella, C. *f.sp.d.*
Loreto Conv., Europa, Gibraltar
Down, E.M. *g.f.do.*
Girls' Secondary S., Devonport
Cremen, H. *f.ph.*
St. Mary's Conv. S., Charleville
Hill, E.M. Girls' Secondary S., Devonport
Vartanian, A. *f.*
English High S., Pera, Constantinople
Black, M. *d.mu.*
Loreto Conv., Europa, Gibraltar
Powell, J. *ms.do.*
Adv. Elem. Girls' S., Merthyr Tydfil
Pelan, M.S. *ms.* Middle Class S., Gosport
Mitchell, W.M. *g.*
Girls' Secondary S., Devonport
Young, W.F. *f.* The College, Goudhurst
Coffey, M. St. Mary's High S., Middleton
Jones, L. *ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Newell, E.M. *f.* Pengwern Coll., Cheltenham
Stubbs, H.B.
The Hiatt Ladies' Coll., Wellington
Harker, M. *ms.do.*
Pengwern Coll., Cheltenham
Jones, D.W. *d.*
The Hiatt Ladies' Coll., Wellington
Morton, M.M. *f.ph.*
St. Mary's Conv. S., Charleville
Duncan, I.M.C. *s.h.*
The Friends' S., Mountmellick
Millward, M.L.H. *f.*
Girls' Secondary S., Devonport
Pritchard, M. Private tuition
Cruickshank, W.G. *g.*
The College, Goudhurst
Carew, M.L. *f.* Birr Conv. of Mercy
Draysey, D.L. *ms.*
Pengwern Coll., Cheltenham
Pinkham, G.V. *f.* Argyle H., Sunderland
Robinson, E.M. Tunbridge Wells High S.
Browne, N. *f. ph.*
St. Mary's Conv. S., Charleville
West, I.G. *f.*
Church of England High S., Penzance
Conolly, K.H. *mu.* Private tuition
McGrath, S. Avenue S., Leigh, Lancs
Bruce, D.C.R. *do.* The College, Goudhurst
Haworth, G.A.
Girls' Gram. S., Levenshulme
Hill, R.E. *f.do.* Congleton Ladies' Coll.
Rosser, M.E. Preswylfa High S., Cardiff
Taberner, M.G. *f.* Private tuition
Wheeler, G. Private tuition
Thomson, K.McC.
Somerville H., Clifton, Bristol
Sissons, E. *g.* Brunt's Tech. S., Mansfield
Rodriguez, P. *d.*
Loreto Conv., Europa, Gibraltar
Leather, A. Avenue S., Leigh, Lancs
Pickering, H.I. Wigton School
Sexton, M.F. Birr Conv. of Mercy
Colmer, O.M.
Woolston Ladies' Coll., Southampton
White, C.M. *f.* Brookvale Coll. S., Belfast
Straiton, I.C. *g.* Private tuition

SECOND CLASS [or JUNIOR].

Honours Division.

Williams, B. *g.a.d.ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Matthews, S.E. *ma.d.*
Pentre Hr. Elementary S.
Aylwin, N. *d.mu.* Chichester P.-T. Centre
Bones, D.M. *s.d.mu.*
The Hiatt Ladies' Coll., Wellington
Waite, D. *e.mu.* Chichester P.-T. Centre
Jones, S. *ma.* Pentre Hr. Elementary S.
Twine, E.D. *h.mu.* Chichester P.-T. Centre
King, B.S. *e.* Chichester P.-T. Centre
Aivasides, I. *s.g.f.*
English High S., Pera, Constantinople
Smith, E.C. *mu.*
Loreto Conv., Europa, Gibraltar
Lane, G. *mu.*
Loreto Conv., Europa, Gibraltar
Hudson, D. *s.* Geneva H., Brondesbury
Vernon, E.M. Tamworth Girls' Secondary S.
Gilmore, F. *g.* Conv. La Sainte Union des Sacres Cœurs, Athlone
Kirk, V.M. *s.mu.*
Upper St. Leonards Ladies' Coll.
Morgan, M. *d.ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Novella, C. *sp.d.mu.*
Loreto Conv., Europa, Gibraltar
Sandbrook, B. *s.*
Adv. Elem. Girls' S., Merthyr Tydfil
Raybould, M.W. *h.*
Tamworth Girls' Secondary S.
Shield, E.H. *ch.* Wigton School
Isaac, D.M. *g.* The College, Goudhurst
Wood, F.M. *a.al.*
Whalley Range Municipal High S.
Evans, E. *ma.* Pentre Hr. Elementary S.
Redding, A. *ms.d.*
Adv. Elem. Girls' S., Merthyr Tydfil
Tuffery, M. Tamworth Girls' Secondary S.
Lewis, J.M. *mu.*
Adv. Elem. Girls' S., Merthyr Tydfil
Lombard, L. *d.* Brunt's Tech. S., Mansfield
Davis, R. *g.*
Whalley Range Municipal High S.
Jones, L.
Adv. Elem. Girls' S., Merthyr Tydfil
Vick, E. *d.mu.* Chichester P.-T. Centre
Lamb, G. *a.al.* Private tuition
Dotto, I. *sp.mu.*
Loreto Conv., Europa, Gibraltar
Adams, E.M. *w.* Pentre Hr. Elementary S.
Coe, K.A. *d.mu.* Chichester P.-T. Centre
Griffiths, H.J. *al.ch.* Ferndale Secondary S.
Davies, O.G. *ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Rodriguez, E. *sp.d.*
Loreto Conv., Europa, Gibraltar
Gaffan, M. *al.mu.*
Whalley Range Municipal High S.
Knight, K. *e.* Geneva H., Brondesbury
Davis, E. *ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Mitchell, D.M. *d.* Chichester P.-T. Centre
Jenkins, Elizabeth (2)
Adv. Elem. Girls' S., Merthyr Tydfil
Weldon, L.R. *s.f.* Congleton Ladies' Coll.
Emmett, N.A. *s.d.mu.*
Cranley H., Muswell Hill
Lowe, D. *al.*
Adv. Elem. Girls' S., Merthyr Tydfil

SECOND CLASS [or JUNIOR].

Pass Division.

[1]Hempsall, S.A. *do.*
Brunt's Tech. S., Mansfield
Davies, C.A. Porth Hr. Grade S.
Jones, L.M.
Adv. Elem. Girls' S., Merthyr Tydfil
Brown, M.H. *s.g.*
Girls' Gram. S., Levenshulme
Hackney, C. *d.mu.*
Rhianva Coll., Hunstanton
[1]Johnson, G.M. *f.* Private tuition
Dugdale, M. Brunt's Tech. S., Mansfield
Waddell, E. Private tuition
Greenwood, M.L. *s.* The College, Goudhurst
Kearney, M. *f.*
St. Mary's Conv. S., Charleville
[1]Pitcher, G. *bk.d.* Guinevere S., Torquay
Watson, J.M. The College, Goudhurst
Abbott, E.M. *mu.* Chichester P.-T. Centre
Morgan, M.M. Porth Hr. Grade S.
Passmore, B. *al.*
Adv. Elem. Girls' S., Merthyr Tydfil
Pouris, T. *f.*
English High S., Pera, Constantinople
Havard, A.M.
Adv. Elem. Girls' S., Merthyr Tydfil
Owen, A.
Adv. Elem. Girls' S., Merthyr Tydfil
Rees, M.A. *al.* Ferndale Secondary S.
Thomas, R.M. *a.* Porth Hr. Grade S.
Davis, N. Brunt's Tech. S., Mansfield
[1]Draper, G. *d.*
St. Dominic's High S., Stoke-on-Trent
Evans, M.A. *ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Price, M.
Adv. Elem. Girls' S., Merthyr Tydfil
Williams, A.
Adv. Elem. Girls' S., Merthyr Tydfil
Tudor, M.E. *s.ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
Ward, N.M. *d.* Stamford H., Edgbaston
Vidal, M.L. *f.sp.* The College, Goudhurst
[1]Fisher, E. *do.* Palmer's Green High S., N.
O'Callaghan, M.M.
St. Mary's Conv. S., Charleville
Slatter, E.M. *d.*
Portsmouth Girls' Secondary S.
Bennet, A.U.L. *f.* Private tuition
Burton, D.M. *mu.*
Conv. of the Compassion, Acock's Green
Farmer, R.W. *s.*
The Hiatt Ladies' Coll., Wellington
Highwood, F.C. The College, Goudhurst
[1]Roberts, M.F.D. Bell's Gram. S., Coleford
Cook, P. Brunt's Tech. S., Mansfield
Rees, E.A.
Adv. Elem. Girls' S., Merthyr Tydfil
Turner, A. Brunt's Tech. S., Mansfield
[1]Wood, M.F. *do.* Private tuition
[1]Croghan, B.
Franciscan Conv. S., Melton Mowbray
Jacob, M.A. Ferndale Secondary S.
[1]Barry, J. Birr Conv. of Mercy
Cockle, D.A. West Central Coll. S., Mecklenburgh Sq., W.C.
Davies, B.M.
Adv. Elem. Girls' S., Merthyr Tydfil
Gibbon, A. Porth Hr. Grade S.
Jones, C.
Adv. Elem. Girls' S., Merthyr Tydfil
McKay, C. Private tuition
McVeigh, E.F.
Portsmouth Girls' Secondary S.
[1]Ray, M.L. Birr Conv. of Mercy
[1]Hart, W. Bell's Gram. S., Coleford
Townend, B.M. *s.e.* Private tuition
[1]Welsh, M. St. Paul's Conv. S., Killinane
Evans, Mary (1)
Adv. Elem. Girls' S., Merthyr Tydfil
[1]Hewlett, D.H. Brunt's Tech. S., Mansfield
[1]Roberts, M.E.
Pengwern Coll., Cheltenham
[1]Ellis, M.A.
Convent, Werneth Grange, Oldham
Guile, E. *mu.* Chichester P.-T. Centre
[1]Jenkins, A.M. P.-T. Centre, Pontypridd
Neuville, M. *d.*
Loreto Conv., Europa, Gibraltar
Roberts, G. Ferndale Secondary S.
Williams, M.A.
Adv. Elem. Girls' S., Merthyr Tydfil
[1]Hale, M.A. Palmer's Green High S., N.
[1]Owen Williams, M. Private tuition
[1]Willis, A. Ladbrook H., Sheffield
King, E. Presentation Conv., Fethard
Ruttledge, N.K. *s.*
The Friends' S., Mountmellick
Bebington, G.M.
St. Dominic's High S., Stoke-on-Trent
[1]Cridland, E.S.B. Private tuition
Davies, K. Porth Hr. Grade S.
[1]Draper, M.L.
Whalley Range Municipal High S.
[1]LeMenager, J. *f.* Private tuition
Lloyd, H.
Adv. Elem. Girls' S., Merthyr Tydfil
Thornhill, E. *do.*
Dominican Conv., Cabra, Dublin
[1]Williams, S. Old College S., Carmarthen
Spiess, M.G. *mu.*
Biltris High S. for Girls, Cricklewood
Dearman, G.B.
Montpellier Coll., Budleigh Salterton
Madge, E.M. *s.* Alwyne Coll., Canonbury
Williams, L.M. Porth Hr. Grade S.
[1]Hill, A. Birr Conv. of Mercy
Ladyman, L. Brunt's Tech. S., Mansfield
Ayres, D.H.
Mall Rd. Girls' S., Hammersmith
Bailey, F.E. Victoria Coll., Liverpool
Brown, E.E. Clatford H., Southampton
Herbert, C.M. Porth Hr. Grade S.
Irwin, H.M. *mu.* Wigton School
Newbury, E.M. *mu.* Chichester P.-T. Centre
Davis, M.M. *mu.*
Franciscan Conv. S., Melton Mowbray
Francis, R. Brunt's Tech. S., Mansfield
Jeremy, S.J. Ferndale Secondary S.
[1]Johnston, L.M.H. *f.* Bandon Grammar S.
Naughton, M.
Dominican Conv., Cabra, Dublin
O'Sullivan, M.
Dominican Conv., Cabra, Dublin
Patton, E.H. Stranmillis Coll. S., Belfast
Shoesmith, O. Private tuition
Yardley, L. Lawrence's Coll., Birmingham
Austin, W.B.
Clark's College Girls' S., Brixton
Gadsby, J. *d.* Geneva H., Brondesbury
Bennett, L.A. Holloway College, N.
Price, M.E. Alleyn Coll., Margate
Hall, D.M. Wigton School
Hammond, M.A.
St. Dominic's High S., Stoke-on-Trent
[1]Padfield, L.M. Private tuition
Coates, V.L. St. Paul's S., Chatham
Flannery, S.
Conv. La Sainte Union, Banagher
Jones, A.B. Stalybridge Hr. Elem. S.
Phillips, F.M. 38 Western Rd., Romford
Gibney, M.M. St. Paul's Conv., Birmingham
Greenwood, M.A. *a.* Private tuition
Griffiths, G.M. Porth Hr. Grade S.
[1]Jones, A.E. Private tuition
Jones, M.M.
Adv. Elem. Girls' S., Merthyr Tydfil
Patterson, J.M. The College, Goudhurst
Judge, L.J. University S., Rochester
Philips, K.M. 38 Western Rd., Romford
Turner, B.B. Chichester P.-T. Centre
Wright, F.H. *f.* Private tuition
Hill, G. Brunt's Tech. S., Mansfield
Wadhams, G.M.E.
University S., Rochester
Whitehead, H.M.
Tamworth Girls' Secondary S
Fitzpatrick, K.
St. Paul's Conv., Birmingham
[1]Hamilton, E. Heathleigh S., Horsmonden
Lambert, E. Heathleigh S., Horsmonden
Lewry, H.M. Selhurst Park S., S. Norwood
Charpiot, M.H. *f.*
Downe H., Downe, nr. Orpington
Elliott, O. Brunt's Tech. S., Mansfield
LePla, E.R. Girls' Gram. S., Levenshulme
Hardy, A. Lime Tree H., York
Norburn, E. Brunt's Tech. S., Mansfield
Trunel, J. *f.* Kenilworth, Seabrook, Hythe
Curtayne, T.M.G. *f.*
Franciscan Conv. S., Melton Mowbray
Griffiths, R. Porth Hr. Grade S.
Hernon, M. Birr Conv. of Mercy
[1]Hughes, M.
The Laurels High School, Walsall
Peters, K.
Adv. Elem. Girls' S., Merthyr Tydfil
Thorne, M.
Adv. Elem. Girls' S., Merthyr Tydfil
Bell, L. Ladies' S., Redhill
Hinton, E. Tamworth Girls' Secondary S.
Lewis, M.
Higher Standard Council S., Aberdare
Mellors, J. *d.* Brunt's Tech. S., Mansfield
Miles, C. Ferndale Secondary S.
Press, M. Milton H., Maidstone
Coates, M. The College, Goudhurst

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GIRLS, 2ND CLASS, PASS—*Continued.*

Fay, N. Dominican Conv., Cabra, Dublin
Gordon, E.D. Higher Grade S., Carlisle
1O'Donnell, N. St. Paul'sConv.S., Kilfinane
1Slocombe, H.M. Alexandra Coll., Shirley

1Rees, B.M.I.F. Private tuition

1Croghan, M.
Franciscan Conv. S., Melton Mowbray
Davies, E.M.
Adv. Elem. Girls' S., Merthyr Tydfil
Hocart, L.R. *f.d.*
Royal Park H., Clifton, Bristol
Inglis, H. Dalston NationalS., Cumberland
Koehly, H. *f.* Annecy Conv., Seaford
1Pemberton, E.G. *sh.*
Seven Thorns S., Hr. Openshaw

Ells, W. Middle Class S., Gosport
Haas, M.H. *f.* Convent High S., Ashford
Russell, G.O.
Clark's College Girls' S., Brixton

Foley, M. St. Mary's Conv. S., Charleville
Grattan, W.
St. Dominic's High S., Stoke-on-Trent
Hemphill, E.H. *f.* St.John'sH., Felixstowe

Booth, N.W.
Notre Dame High S., Clapham Common
O'Connell, M.
Dominican Conv., Cabra, Dublin
Walshe, T. DominicanConv., Cabra, Dublin

Evans, Mary(2)
Adv. Elem. Girls' S., Merthyr Tydfil
1Méheut, J.R. *f.* Private tuition

Flanagan, M.
Conv. La Sainte Union, Banagher
Garrett, M.S.
Higher Standard Council S., Aberdare
Warren, G.
Adv. Elem. Girls' S., Merthyr Tydfil
Watson, W. Girls' S., South Cave, Brough

1Buggs, E.A. Heathleigh S., Horsmonden
Davenport, E.
St. Dominic's High S., Stoke-on-Trent
1Logan, M.W. Ladies' S., Ballyclare
1Molloy, A. Birr Conv. of Mercy

Andreae, E. St. Mary's Conv., Bruff
Bennett, L.M.
St. Dominic's High S., Stoke-on-Trent
Gibson, H.E.
The Friends' S., Mountmellick
1Morgan, A. Private tuition
1Stapleton, F.J. Private tuition

Deacon, E.M. The Elms, Sutton-on-Trent
Graham, L. Victoria Coll., Belfast
Horry, N. St. John's H., Felixstowe
Noone, J. Dominican Conv., Cabra, Dublin
Protheroe, D. Porth Hr. Grade S.

Bailey, J. Brunt's Tech. S., Mansfield
Foley, K. *ms.*
Adv. Elem. Girls' S., Merthyr Tydfil
1Metcalf, L.H. Private tuition

Slamen, M. Birr Conv. of Mercy
1Taylor, M. Private tuition

1Clancy, S. St. Paul's Conv. S., Kilfinane
Thomas, M.I. *mu.*
College for Girls, The Newlands, Bootle

Bulbeck, I.
Notre Dame High S., Clapham Common
Hughes, G. Tutorial S., Penarth
Moore, M.M. Victoria Coll., Belfast
Shilton, D.L. Towcester School
1Webbe, M.A. Private tuition

Girling, E. St. John's H., Felixstowe
Mansell, C.A.
Adv. Elem. Girls' S., Merthyr Tydfil
Rover, E.A.
St. Margaret's High S., Forest Gate

McPherson, D.
Notre Dame High S., Clapham Common

Audain, B.M.
Melbourne Coll., Thornton Heath
Brett, E.
Notre Dame High S., Clapham Common
Broadbent, E. Brighton H., Oldham
MacDonnell, M. St. Mary's Conv., Bruff

Barrett, E.J. Ferndale Secondary S.
1Booth, E. Avenue S., Leigh, Lancs
Ordish, N. Portsmouth Girls' Secondary S.
1Beadle, F.M. Private tuition
Jones, A.S.
Adv. Elem. Girls' S., Merthyr Tydfil
Stroud, M. Milton H., Maidstone
Wyer, N.
Conv. of Mercy, Clifford, Boston Spa

THIRD CLASS.

Honours Division.

Fry, E.M. *s.e.a.al.*
Adv. Elem. Girls' S., Merthyr Tydfil
Williams, A. *s.e.a.al.*
Adv. Elem. Girls' S., Merthyr Tydfil
Jones, E. *s.g.a.al.*
Adv. Elem. Girls' S., Merthyr Tydfil

Edgcome, A.M. *s.e.h.f.*
Manor House, Surbiton
Griffith, A. *s.e.gm.*
Girls' Gram. S., Levenshulme
Jalouris, C. *e.f.g.*
Scots Mission S., Galata, Constantinople

Aherne, K. *a.al.f.d.*
St. Mary's High S., Midleton
Violi, C. *f.it.*
English High S., Pera, Constantinople
Moore, J.M. *e.f.ge.*
LaRuche, RolandGardens, S. Kensington
Wellisch, M. *e.a al.f.d.*
English High S., Pera, Constantinople

Mosley, C. *sp.*
Loreto Conv., Europa, Gibraltar
Rosenstein, A. *e.f.ge.*
Scots Mission S., Galata, Constantinople

Colburn, L.L. *e.a.al.gm.sc.*
Pentre Hr. Elementary S.
Thomas, M.J. *e.a.al.w.*
Pentre Hr. Elementary S.

Milliken, K.M. *s.e.f.* Victoria Coll., Belfast
Walters, M. *s e.a.*
Adv. Elem. Girls' S., Merthyr Tydfil

Walker, M.C. *e.mu.* Wigton School
Wernicke, K.M. *s.e.h.f.*
Upper St. Leonards Ladies' Coll.

Evans, C.M. *e.a.al.w.sc.*
Pentre Higher Elem. S.
Madge, D.M. Alwyne Coll., Canonbury

Bell, C.E. *e.g.*
Adv. Elem. Girls' S., Merthyr Tydfil
Mather, C. *e.a.f.*
Conv. of the Ladies of Mary, Croydon
Parry, M. *s.d.*
Adv. Elem. Girls' S., Merthyr Tydfil
Smiley, E.F.M. *e.a.al.*
Victoria Coll., Belfast

Carp, B. *s.e.ge.*
Scots Mission S., Galata, Constantinople
Reilly, D.K. *e.al.f.*
The Friends' S., Mountmellick

O'Connell, L. *a.gm.f.*
Presentation Conv., Fethard

Maguire, M.M. *a.d.*
St. Mary's Conv. S., Charleville
O'Byrne, M. *d.*
St. Mary's Conv. S., Charleville
Phillips, G.M. *a.bk.d.* Sirsa H., Cheltenham
Stewart, E.M. Westbank S., Dulwich

Cooke, A.E. *s.* Girls'Gram.S., Levenshulme
Graham, E. Victoria Coll., Belfast
Atkinson, I. *s.e.*
Fartown Gram. S., Huddersfield
Farrow, O. *e.f.* Annecy Conv., Seaford
Hoffmann, R.J.L. *f.* Private tuition

Flannery, M.E. *e.* Conv. La Sainte Union des Sacrés Cœurs, Athlone
Hawkins, A.L. *s.*
Adv. Elem. Girls' S., Merthyr Tydfil
Huggins, A.G. The Bryant S., Wainfleet
Jones, A.G. *e.* Tutorial S., Penarth

Drury, F.W. *d.*
The Friends' S., Mountmellick
Higginbotham, L. *d.*
High S., York Rd., Chorlton-cum-Hardy
Wood, F.A.
The Hiatt Ladies' Coll., Wellington

THIRD CLASS.

Pass Division.

2Burrell, M. *f.mu.* Chichester P.-T. Centre
2Witheridge, G.O. *g.* TheCollege, Goudhurst
2Barfoot, D.L. *d.* The College, Goudhurst
2Imossi, A.
Loreto Conv., Europa, Gibraltar
2Harding, M.E. *mu.*
Upper St. Leonards Ladies' Coll.
2Drinkwater, J. *mu.* Chichester P.-T. Centre
2Bell, C.E. St. Paul's Conv., Birmingham
2Banks, E.A.C. *s.*
The Hiatt Ladies' Coll., Wellington
2Will, M. *mu.* Eversley H., Cricklewood

2Archer, E.M. St. John's H., Felixstowe
2Morgan, L.E. Porth Higher Grade S.

2Lewis, M.A.
Adv. Elem. Girls' S., Merthyr Tydfil
2Welstead, M.I. *d.*
Upper St. Leonards Ladies' Coll.

2Day, A. *s.* Heathleigh S., Horsmonden
2Simmons, P.H. Grove H., Highgate

2Devenish, S.
Portsmouth Girls' Secondary S.
2Mowl, K.E. The College, Goudhurst
2Rowland, G.A.
Kenilworth, Seabrook, Hythe

2Watts, M. *w.*
Adv. Elem. Girls' S., Merthyr Tydfil
2Allen, M.
St. Dominic's High S., Stoke-on-Trent
2Sarll, M. *mu.*
Franciscan Conv. S., Melton Mowbray
2Sikes, W.M. *mu.*
Grannum Lodge, Edgerton

2Lamb, D.A. Lime Tree H., York
2Mann, R.D. *ms.*
Pengwern Coll., Cheltenham
2Morrissey, C.
St. Paul's Conv., Birmingham

2Barry, M. St. Mary's Conv., Bruff
2Hill, B. Clark's College Girls' S., Brixton

2Day, D.G. Portsmouth Girls' SecondaryS.
2Eggett, J.H. Sandal Dene, New Malden
2Williams, G.M.
Conv. of the Compassion, Acock's Green

2Hewlett, D. Brunt's Tech. S., Mansfield
2McInerney, M.
Dominican Conv., Cabra, Dublin
2Norris, V. Private tuition

2Brennan, E. Birr Conv. of Mercy
2Gostick, D.G. *d.*
Netherthorpe Gram. S., Staveley

2Graham, W.M.
Cornwallis High S., Hastings
2Barry, M. Dominican Conv., Cabra, Dublin
2Reilly, F.
St. Dominic's High S., Stoke-on-Trent
2Welch, E.G. *d.* Chichester P.-T. Centre

2Farmer, E.M. *d.*
St. Dominic's High S., Stoke-on-Trent

Bourke, B. *al.d.*
St. Mary's High S., Midleton
2Bowen, H. Ferndale Secondary S.
2Hodges, Mona Clifton, Youghal
Malone, M.E. *f.*
Convent High S., Portishead
2Moorhead, J. Victoria Coll., Belfast
2O'Hare, E. Murray's Academy, Belfast

Beaufort, W.I. *a.al.*
Beulah House High S., Balham High Rd.
Cumming, M.C.
English High S., Pera, Constantinople
Dalton, R. *s.sh* Conv. La Sainte Union des Sacrés Cœurs, Athlone
Fayle, M.E. *s.*
The Friends' S., Mountmellick
Keating, A. *a.f.* PresentationConv., Fethard
Nouh, E. *f.d.*
English High S., Pera, Constantinople

Cagney, H. St.Mary's Conv.S., Charleville
Cunningham, R. *e.*
Dominican Conv., Cabra, Dublin
2Lacamp, M.C.E. The HaughtonS., York
2Lee, E. Hr.StandardS., Sutton-in-Ashfield
2Stephens, E.T. *mu.* Edgbaston Academy

Gatley, M.A. *e* The College, Goudhurst
Jones, C. *a.*
Adv. Elem. Girls' S., Merthyr Tydfil
Kenrick, K. *a.f.* PresentationConv., Fethard
Leahy, D. *d.* St. Mary's Conv., Bruff
2LeMay, G.B. St. John's H., Felixstowe
Lequien, M. *f.* Annecy Conv., Seaford
Lion, J.M. *f.* Annecy Conv., Seaford
2Shiel-Walshe, G.
Dominican Conv., Cabra, Dublin

Evans, A. *e.w.* Porth Hr. Grade S.
Gripper, E.C. *e.f.* The College, Goudhurst
Kenny, M. *e.* St. Mary's Conv., Bruff
Peon, A. *sp.*
Conv. of the Ladies of Mary, Croydon
Pollexfen, H.E. *al.*
The Friends' S., Mountmellick
Smith, A.E. *d.* Sirsa H., Cheltenham
2Woolcock, A. Ashley High S., LongSutton

Collins, M.G.B. *ge.i.* Private tuition
Cressingham, L. *e.*
Loreto Conv., Europa, Gibraltar
2Evans, B.
Adv. Elem. Girls' S., Merthyr Tydfil
Gasking, L.M. *d.* St. Leonards, Selborne Rd., Handsworth Wood
Jenner, D.F. *e.* The College, Goudhurst
2Thompson, L.M. Private tuition
2Williams, E. Porth Hr. Grade S.

2Coyne, K. Adelphi H., Salford
Doeg, M. *mu.* Wigton School
Montgomery, M.E. *e.a.*
Elmwood Avenue S., Belfast
Veness, J. *e.f.* Manor H., Surbiton
West, M.A. *a.* Geneva H., Brondesbury

Evans, M. *a.*
Adv. Elem. Girls' S., Merthyr Tydfil
2Fleury, H.E.
ConventHighS., TheAvenue, Southampton
James, C.M. *a.sc.* PentreHr. ElementaryS.
Killourey, D. St. Mary's Conv., Bruff
2Rodgers, M. Brunt's Tech. S., Mansfield
Thomson, D. *e.*
Conv. of the Ladies of Mary, Croydon
2Thomson, O. Stranmillis Coll. S., Belfast
Brown, V.E. *f.* Redcliffe H., E. Southsea

2Clery, H. St. Mary's Conv., Bruff
2Fogarty, N.
Dominican Conv., Cabra, Dublin
2Knightley, E. Central Hr.Grade S., Acton

2Carson, M.E. Victoria Coll., Belfast
2Harton, J. St. Mary's High S., Midleton
Humphreys, D. *e.* Milton H., Maidstone
Jones, M.J.
Adv. Elem. Girls' S., Merthyr Tydfil
Major, O.M. *d.*
The Hiatt Ladies' Coll., Wellington
O'Neill, N. St. Mary's Conv. S., Charleville
2Richardson, G.M. UniversityS., Rochester

Daysh, E.C. *e.h.* Lynton H., Portsmouth
Franklin, G.V. Sirsa H., Cheltenham
Higham, N. *d.*
Girls'S., Promenade, South Shore, Blackp'l
Isaac, M.
Adv. Elem. Girls' S., Merthyr Tydfil
Pettitt, P.M. *d.* The College, Goudhurst
Purcell, K. *d.* St. Mary'sConv.S., Charleville
Rees, N. *s.*
Adv. Elem. Girls' S., Merthyr Tydfil

Brown, M.R.
High S., York Rd., Chorlton-cum-Hardy
Chappell, G.M.
Fartown Gram. S., Huddersfield
Harrison, D H.
The Friends' S., Mountmellick
Kerridge, M.E. *s.a.*
St. Edmund's S., Hunstanton
2MacDonald, L. St. Mary's Conv., Bruff
Morgan, K.L. *w.*
Adv. Elem. Girls' S., Merthyr Tydfil
2Rees, M.
Adv. Elem. Girls' S., Merthyr Tydfil

Blake, L. *l.* Private tuition
2Jones, E.G.
St. Dominic's High S., Stoke-on-Trent
Mowl, D.O. The College, Goudhurst
Mullins, J. St. Mary's Conv., Bruff
Rust, E.G. *e.* The College, Goudhurst
Ryan, J. St. Mary's Conv., Bruff
Woodfull, B.M. *s.h.g.*
The Poplars, Small Heath, Birmingham

Alexander, M.D. *e.f.*
Mansfield H. Coll., Cliftonville, Margate
2Arden, F. Upholland Gram. S., Orrell
Bellucci, R. *e.f.*
Notre Dame de France, Leicester Sq., W.C.
Buckler, E. *f.* Milton H., Maidstone
Burrows, L.M. The Seminary, Abbeyleix
Davies, M. Edith
Adv. Elem. Girls' S., Merthyr Tydfil
Keily, M. *e.* DominicanConv., Cabra, Dublin
Lander, B.I. *d.*
The Hiatt Ladies' Coll., Wellington
Malone, N. *a.f.* PresentationConv., Fethard
Martyn, M.A. *a.* Porth Hr. Grade S.
2Parratt, A. Ashley High S., Long Sutton
Picard, M.T. *f.* Annecy Conv., Seaford
2Redman, C.
St. Dominic's High S., Stoke-on-Trent
2Ross, S. Ladies' S., Ballyclare
Savory, K.V.M. *e.* Private tuition
2Whittington, G.M.
Bell's Gram. S., Coleford
2Williams, A. TamworthGirls'Secondary S.

Davies, L.M.
The Hiatt Ladies' Coll., Wellington
2Fleming, V.
Adv. Elem. Girls' S., Merthyr Tydfil
Leplat, G. *f.*
Conv. of the Ladies of Mary, Croydon
Lloyd, J.
Raleigh Middle Class S., Stoke Newington
Moore, M.G. *s.e.h.*
Christ Church Hr. Grade S., Bootle
2Moxley, V.M.
Bestreben High S., Brondesbury
O'Connor, M.B.
St. Mary's Conv. S., Charleville
O'Donohoe, E.
Notre Dame High S., Clapham Common
2Robins, M. Porth Hr. Grade S.
2Ryan, M. St. Paul's Conv. S., Kilfinane

Browne, D. St. Mary's Conv.S., Charleville
Capper, A G. *e.* PrincessGardens S., Belfast
2Clewett, F.A Private tuition
Cubitt, I. St. Hildred's, Southsea
Kent, L. St. Hildred's, Southsea
Mason, M.M.
Raleigh Middle ClassS., Stoke Newington
Walters, A. *mu.*
College for Girls, The Newlands, Bootle

2Armstrong, E. Council S., Silloth
Beckett, H.F. The College, Goudhurst
Burgess, R.N. *e.* The College, Goudhurst
2Chilton, E.A. Chadsmoor Girls' CouncilS.
Dunworth, D. St. Mary's Conv., Bruff
Edwards, E.F.
Montpellier Coll., Budleigh Salterton
Jennings, M. Private tuition
Kilkelly, G. Conv. La Sainte Union des Sacrés Cœurs, Athlone
Long, K. *e.*
Conv. of the Ladies of Mary, Croydon
Martin, M. St. Mary's Conv., Bruff
2M'Rechnie, M. High School, Cork

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GIRLS, 3RD CLASS, PASS.—*Continued.*

Peters, A, *al.*
Conv. of the Ladies of Mary, Croydon
Smyth, M.J. *d.* Hopedune, Portrush

Day, M. Heathleigh S., Horsmonden
Gardiner, W.H. Lancelyn H., KewGardens
Lawlor, A. DominicanConv., Cabra, Dublin
Lyster, E.M.V. *f.*
English High S., Pera, Constantinople
Mitchell, J.I.
Notre Dame High S., Clapham Common
Proctor, D.
Notre Dame High S., Clapham Common
Shaw, E.
Adv. Elem. Girls' S., Merthyr Tydfil
²Vidler, J.E. Leslie H., Cheshunt

Barres, J. *f.* Annecy Conv., Seaford
²Baynham, M. Bell's Gram. S., Coleford
Brown, E. St. Hildred's, Southsea
²Burns, M. St. Mary's Conv., Bruff
²Day, G.E.F. Weymouth P.-T. Centre
Feore, M. *c.* St. Mary'sConv.S., Charleville
Godley, A.E. Arlington Villa S., Brighton
Horley, M. *d.*
Montpellier Coll., Budleigh Salterton
Hoye, R.P. *s.e.* Private tuition
Leicester, B.M. *s.e.*
Christ Church Hr. Grade S., Bootle
²Wilson, M.H. Ladies' S., Ballyclare

²Bevan, E.E.E. Porth Hr. Grade S.
Bruce, E.E. The College, Goudhurst
Bush, J.M. *ge.* The College, Goudhurst
Carroll, G. St. Mary's Conv. S., Charleville
Duggan, D.*e.* St. Mary'sConv.S., Charleville
²Finnegan, M. Birr Conv. of Mercy
Gegg, M.J. *d.*
St. Anne'sConv., Camp Hill, Birmingham
Griffin, J.
Adv. Elem. Girls' S. Merthyr Tydfil
Hammond, M. Annecy Conv., Seaford
Humphries, I. AshleyHighS., Long Sutton
²Murphy, L. St. Mary's High S., Midleton
²Price, J.
Higher Standard Council S., Aberdare
Rees, N.G. Lynton H., Portsmouth
Skehan, A. *a.* Presentation Conv., Fethard
Whybro, E.M. *e.* The College, Goudhurst

Alexander, O. Porth Hr. Grade S.
Carpenter, D.G. *e.* The College, Goudhurst
Comley, L.
Adv. Elem. Girls' S., Merthyr Tydfil
Filose, M. *f.*
Dominican Conv., Cabra, Dublin
O'Brien, E. *a.* St. Mary's Conv., Bruff
O'Brien, U. St. Mary's High S., Midleton
O'Connor, K.
Conv. of the Ladies of Mary, Croydon
Smith, S.M.
The Hiatt Ladies' Coll., Wellington
Vigor, D.M. *e.* Heathleigh S., Horsmonden

Cundy, H.
Conv. of the Ladies of Mary, Croydon
Foster, M. *d.* The College, Goudhurst
Kelly, J. Milton H., Maidstone
²Thurlow, R Private tuition
Wheller, P.C. University S., Rochester

²Bullivant, G.E.
72 Sandon Road, Edgbaston
²Jenkins, Elizth.(1)
Adv. Elem. Girls' S., Merthyr Tydfil
Mitchell, E.H. *e.*
Heathleigh S., Horsmonden
²Pickering, E.
St. Dominic's High S., Stoke-on-Trent
Ryan, K.
St. Mary's Conv. of Mercy S., Buttevant
Taylor, D.B. Lynton H., Portsmouth
Wilson, B.S. Highfield Coll., Bispham
²Wrench, K.
St. Dominic's High S., Stoke-on-Trent

Clarke, D.*s.d.* St. Edmund'sS., Hunstanton
Clery, M.*e.* DominicanConv., Cabra, Dublin
²Dixon, M. 1 Manor Terrace, Tynemouth
Glover, P. Lancelyn H., Kew Gardens
Golzard, R. *f.* Milton H., Maidstone
²McCann, M.
Dominican Conv., Cabra, Dublin
²McGinn, E.F. Porth Hr. Grade S.
Mooney, A.P. Private tuition
Rees, D.M. Cleveland H., Lower Clapton
²Stokes, M.M.
Hr. Standard S., Sutton-in-Ashfield
²Venables, M.
Notre Dame High S., Clapham Common

Bailey, E.
Conv. of the Ladies of Mary, Croydon
Ball, S.B. The Laurels, Kegworth
²Brown, T.
St. Mary'sConv., TheNewlands, Middlesbro'
Browne, M. Conv. La. Sainte Union des Sacrés Cœurs, Athlone
Crane, M. *s.a.* St. Edmund'sS., Hunstanton
Goult, M.D.
St. Margaret's High S., Forest Gate
Gregson, F. Highfield Coll., Bispham
Hawthorne, M.C. Private tuition
²Hyland, G.G. Holloway College, N.
Lamont, F.M.E. Wellesley Lodge, Sutton
²Simkins, E.M. High School, Cork

Andjel, E. *al.f.*
English High S., Pera, Constantinople
Cameron, C.J.R. Highfield Coll., Bispham
Cronin, J. St. Mary's Conv. S., Charleville
Cullen, J. *e.*
Dominican Conv., Cabra, Dublin
Edwards, D. The College, Goudhurst
Hewitt, W.A.
St. Peter's Church S., Bayswater
Higgins, M.J.
Conv. La Sainte Union, Banagher
²Lenihan, N. St. Mary's Conv., Bruff
Moss, M. Annecy Conv., Seaford
Mullins, M. St. Mary's Conv., Bruff
O'Connor, E. *e.*
Dominican Conv., Cabra, Dublin
Phillips, W.
Conv. of the Ladies of Mary, Croydon
Poole, L. High S., The Green, Twickenham
Sagar, E.M. *h.* Highfield Coll., Bispham
²Stone, L.P. Weymouth P.-T. Centre
Tattan, H. *al.* St. Mary'sHighS., Midleton
Temple, M.H. *f.* Alresford S., Chislehurst
²Thomas, A. Pencader Grammar S.

Anglim, M. Presentation Conv., Fethard
Brassill, M. *a.*
St. Mary's Conv. S., Charleville
Cuddy, M. Birr Conv. of Mercy
Davies, Margt. Elizth.
Adv. Elem. Girls' S., Merthyr Tydfil
²Dymond, L.M. HoeGrammarS., Plymouth
Stearn, D. Milton H., Maidstone

Hodges, Maysie Clifton, Youghal
²Nagle, W. Bandon Grammar S.
²Parry, W.G. Porth Hr. Grade S.
Reidy, M. St. Mary's Conv. S., Charleville
Scarlett, E.L. *s.* Southoe H., Richmond

²Bamber, E. Private tuition
Boland, R. DominicanConv., Cabra, Dublin
Collomb, J. *f.* Milton H., Maidstone
Rae, W.P. Grosvenor Coll., Liverpool
Ramsay, A.R. *e.* Conv. La Sainte Union des Sacrés Cœurs, Athlone
Robinson, C. Stretton H., Fleetwood
Roulstone, M.C. *e.*
Princess Gardens S., Belfast
²Sherrard, M. Ava Girls' Coll. S., Belfast

Cleary, N. DominicanConv., Cabra, Dublin
Evans, M. Porth Hr. Grade S.
Jenkinson, D.M. Hornchurch High S.
Lewis, J.M.
Adv. Elem. Girls' S., Merthyr Tydfil
McGregor, M.L. *e.*
Marist Convent S., Tottenham
O'Connell, L.
St. Mary's Conv. of Mercy S., Buttevant
O'Leary, R. St. Mary's Conv., Bruff
Seyler, I.A. *d.* Palmer's Green High S., N.

Allen, D.A.
St. Peter's Church S., Bayswater
Andrews, E.O. St. John's H., Felixstowe
Downey, M. St. Mary's Conv., Bruff
Dudgeon, H.M.
Princess Gardens S., Belfast
Hughes, Edith
Adv. Elem. Girls' S., Merthyr Tydfil
Jones, C.J. *d.*
Adv. Elem. Girls' S., Merthyr Tydfil
Margetts, N. *d.*
St. Edmund's S., Hunstanton
Osborne, D.A.
Girls'S., Promenade, South Shore, Blackp'l
Rowlands, K.M. *a.*
Gram. & Coll. S., Carnarvon
Taylor, R.M. Heathleigh S., Horsmonden
Towell, C. Porth Hr. Grade S.

Betts, P.M. Stanley H., Eye
Filose, B. *f.*
Dominican Conv., Cabra, Dublin
Ingham, M. Fairhaven High S., nr. Lytham
²Johns, G. Private tuition
²Liddy, K. St. Mary's Conv., Bruff
Munro, A. Upholland Gram. S., Orrell
Reed, L.H. Magdalen College S., Wainfleet
Rose, S.L. Stanley H., Eye
Sara, E.C.B. 7 FrobisherTerrace, Falmouth

Clarkson, G. Inglewood, Mobberley
Denew, D.M.
Clovelly, Clarendon Rd., Cliftonville
Humphreys, M. *s.*
Adv. Elem. Girls' S., Merthyr Tydfil
Jennings, M.E.J.A.
Montpellier Coll., Budleigh Salterton
Mitchell, D.
Girls' S., Promenade, S. Shore, Blackpool
²Moses, L.
Higher Standard Council S., Aberdare
Overett, B.H. CardenS., PeckhamRye, S.E.
Richards, E.M. Atcombe H., Barry
²Schulze, O.B. Chatham H., Wimbledon
Shyer, G. Milton H., Maidstone
Warner, S. *a.* High School, Cork

Baker, E. Clarendon Coll., Tufnell Park
Beyer, E.
Notre Dame High S., Clapham Common
Clark, E.B. Brook Green Girls' Coll., W.
Cole, H.S.E.
College for Girls, The Newlands, Bootle
Hay, O.M. The College, Goudhurst
Hutchinson, E.A.M.
18 Hawthorn Road, Gosforth
Laycock, E.M. Feltham High School
O'Connell, D. St. Mary's High S., Midleton
Townsend, I.M.
Montpellier Coll., Budleigh, Salterton
Webb, M.E. The Laurels, Kegworth

Ashworth, E. Guelph Coll., Bristol
Belcher, H.M.
The Hiatt Ladies' Coll., Wellington
Cooper, A.E. The College, Goudhurst
²Dando, B. Chadsmoor Girls' Council S.
Dixon, M.
Notre Dame High S., Clapham Common
Evans, F.
Adv. Elem. Girls' S., Merthyr Tydfil
Guinane, D.
Dominican Conv., Cabra, Dublin
Hughes, Eva
Adv. Elem. Girls' S., Merthyr Tydfil
Maguire, N.
St. Mary's Conv. S., Charleville
Murphy, E.*e.* Marist Conv. S., Tottenham
²Powell, C. Milton H., Maidstone
Witt, H.
Conv. of the Ladies of Mary, Croydon

Allingham, C.
Dominican Conv., Cabra, Dublin,
Daly, N.M. *a.*
St. Mary's Conv. S., Charleville
Dawson, M.
Fartown Gram. S., Huddersfield
Horne, M. Newtown S., Waterford
Lemon, V.
Conv. of the Ladies of Mary, Croydon
Lyle, M.K. Hopedune, Portrush
Murray, V. Annecy Conv., Seaford
Saville, B.H. Roxby, WrothamRd., Barnet
²Williams, F. Pencader Grammar S.

Byrne, W. Birr Conv. of Mercy
Downes, D.
Dominican Conv., Cabra, Dublin
Gibbings, C.M. High School, Cork
Lyddy, S. St. Mary's Conv., Bruff
Pomeroy, K.M.
Montpellier Coll., Budleigh Salterton
Quinn, K. Dominican Conv., Cabra, Dublin
Taylor, O. Highfield Coll., Bispham
Tipples, K.G. Heathleigh S., Horsmonden
Walsh, M. Cahir Conv. National S.
Waycott, W.S. Exmouth Villa, Stoke

Bell, S.A. Fairhaven High S., nr. Lytham
Cooke, M. Birr Conv. of Mercy
Forde, L.G.
Knock Inter. S. & Kindergarten, Lalghar
Hammond, E. Annecy Conv., Seaford
²Higgins, C. St. Mary's Conv., Bruff
Meaney, N. St. Mary's Conv., Bruff
O'Brien, J.M. St. Mary's Conv., Bruff
O'Donnell, S. Presentation Conv., Fethard
Rees, B.M. Porth Hr. Grade S.
Tucker, K.
Notre Dame High S., Clapham Common

Clarke, A.M. Ballure H., Gt. Crosby
Davies, Mary Elizabeth
Adv. Elem. Girls' S., Merthyr Tydfil
French, B. The College, Totnes
Hayes, H.E. The College, Goudhurst
McBeath, M. Wigton School
O'Connor, H.M. St. Mary's Conv., Bruff
O'Regan, M. St. Mary's Conv., Bruff
Pennington, G.M. *d.*
Grosvenor Coll., Liverpool
Potter, M. *e.*
Conv. of the Ladies of Mary, Croydon
²Pouchat, M.V. *f.*
St. Joseph's Conv., Redhill
Sturch, M. Guelph Coll., Bristol

Colombe, B.C. *f.* French Conv., Newhaven
Cregan, C. St. Mary's Conv., Bruff
Hannen, H.I. Wigton School
McKenzie, E.
Notre Dame High S., Clapham Common
Newton, A.
Conv. of the Ladies of Mary, Croydon
²Taylor, L. Walsall Rd. Girls' S., Cannock

Cronin, M.
St. Mary's Conv. of Mercy S., Buttevant
Davis, P.W.
Notre Dame High S., Clapham Common
Kennedy, M. *d.* Cahir Conv. National S.
Knight, W.E.
Girls' High S., Ramshill, Petersfield
Ronayne, M.J. St Mary's HighS., Midleton
Rowlands, S.A
Adv. Elem. Girls' S., Merthyr Tydfil
Skehan, M. Presentation Conv., Fethard
Stains, M. Milton H., Maidstone

Donoghue, M. Sacred Heart S., Kanturk
Duggan, E. St. Mary's Conv., Bruff
Gibbon, L.
Adv. Elem. Girls' S., Merthyr Tydfil
Gibbs, E.A. *s.* ClarendonColl., TufnellPark
²Guy, D. High School, Cork
Lones, P.M. Stamford H., Edgbaston
Offley, E. Whysall H., Heanor
O'Gorman, M.E.
St. Mary's Conv. S., Charleville

Berridge, D.F.E.
Brook Green Girls' Coll., W.
Berridge, F.M. Brook Green Girls'Coll., W.
Betts, K.W. Stanley H., Eye
Deputron, I.
Conv. of the Ladies of Mary, Croydon
Donoghue, K. Cahir Conv. National S.
Hill, D.C. *e.* Congleton Ladies' Coll.
McKenna, M.
Conv. of the Ladies of Mary, Croydon
Tesseyman, G. *d.*
Conv. of Mercy, Clifford, Boston Spa
Welch, E. Beaulieu S., Swanwick

²Cock, E.M. St. Joseph's Conv., Redhill
Cotter, M. DominicanConv., Cabra, Dublin
Mooney, K.M.
Franciscan Conv. S., Melton Mowbray
O'Connor, M.
Dominican Conv., Cabra, Dublin
Parkinson, G. Upholland Gram. S., Orrell
Williams, M. Porth Higher Grade S.

Adams, A. Tutorial S., Penarth
Cleary, M.B. Cahir Conv. National S.
²Cole, A.L. Private tuition
Kelly, M. Conv. LaSainteUnion, Banagher
Looney, M. *a.*
Conv. of the Ladies of Mary, Croydon
Moroney, B. St. Mary's Conv., Bruff
Power, A. Cahir Conv. National S.
Snapper, R.L.
Mansfield H. Coll., Cliftonville, Margate

Clarke, E. Cahir Conv. National S.
Farrell, E. Dominican Conv., Cabra, Dublin
Freeman, D.I. Rhianva Coll., Hunstanton
Griffiths, A. Marist Conv. S., Tottenham
Heffernan, Mary. Cahir Conv. National S.
Kelly, J. St. Mary's Conv., Bruff
Niblett, E.M.D.
Anby House Coll., West Hackney
O'Neill, K. DominicanConv., Cabra, Dublin
Reid, D.F. Carden S., Peckham Rye, S.E.
Seddon, I.H.
Girls'S., Promenade, South Shore, Blackp'l
Taylor, E.A. Mount Pleasant S., Derby

Adshead, E.E.
Knock Inter. S. & Kindergarten, Lalghar
Ainslie, P.
Wincham Hall Coll., Lostock Gralam
Blackman, B.M.
Mall Rd. Girls' School, Hammersmith
Bree, E.M. Rhianva Coll., Hunstanton
Brown, C.L. Princess Gardens S., Belfast
Ford, A.F. Evelyn High S., Up. Holloway
Irwin, M. Dominican Conv., Cabra, Dublin
Killeen, L. DominicanConv., Cabra, Dublin
Maeers, L.M. Carden S., Peckham Rye, S.E.
²Parker, R. Private tuition
Pocock, W. Clarendon Coll., Tufnell Park
Woodhouse, L.
Franciscan Conv. S., Melton Mowbray

Barthelmeh, L. St. Wilfrid's Conv., Chelsea
²Edwards, S.A.
Conv. of Mercy, Wellesley Rd., Croydon W.
Fitzgibbons, A. St. Mary's Conv., Bruff
Porter, G. Upholland Gram. S., Orrell
Webb, E.M. Ellerslie H., Worthing

Anglim, M.E. Presentation Conv., Fethard
O'Brien, K. St. Mary's Conv., Bruff
Patton, E.J. Victoria Coll., Belfast

Barthelmeh, M. *d.*
St. Wilfrid's Conv., Chelsea
Cahill, C.*e.* DominicanConv., Cabra, Dublin
Kuhn, C. Marist Convent S., Tottenham
O'Gorman, N. St. Mary's Conv., Bruff
Phillips, A.M. 72 Sandon Rd., Edgbaston

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LOWER FORMS EXAMINATION. — PASS LIST, MIDSUMMER, 1909.

BOYS.

Abram, J. F. W. The Hermitage S., Grimsargh
Adamson, C. Newquay College
Addison, R. Private tuition
Allan, M. H. Argyle H., Sunderland
Allen, S. D. E. Gram. School, Streatham
Alvargonzalez, Z.
St. Aloysius' Coll., Hornsey Lane, N.
Bach, L. C. All Saints' Choir S., Clifton
Balkwill, V. J.
Stoke Public Higher S., Devonport
Ball, L. C. Endcliffe Coll., Sheffield
Banks, H. B. Salesian S., Farnborough
Banwell, F. E. Tankerton College
Barker, J. A. D.
Stoke Public Higher S., Devonport
Barlow, A. Gram. School, Chichester
Barlow, T. Upholland Gram. S., Orrell
Barrett, E. Margate College
Bastick, F. H. Richmond Hill S., Richmond
Batchelor, A. W.
Osborne High S., West Hartlepool
Batham, A. Walsall Com. Coll.
Bauscher, A. V.
Hillmartin Coll., Camden Road, N.W.
Bazley, H. A.
Stoke Public Higher S., Devonport
Beale, E. E. Margate College
Bedbrook, C. T. W.
Richmond Hill S., Richmond
Bedder, F. G. P.
Stoke Public Higher S., Devonport
Bedingfield, G. Salesian S., Battersea
Bell, D. P. St. George's Coll., Weybridge
Bellamy, J. M. The Douglas S., Cheltenham
Bennison, W. H. Scorton Gram. S.
Bertuchi, C. Christian Bros.' Coll., Gibraltar
Betchetti, T. D. The Haughton S., York
Binder, E. R. Gram. School, Taplow
Birkett, G. H. Salesian S., Farnborough
Box, B. Gram. School, Chichester
Bradley, M. E. St. George's Coll., Weybridge
Brett, F. Hillmartin Coll., Camden Road, N.W.
Briggs, R. McC. Cheltonia College, Streatham
Bright, L. H. St. John's Coll., Brixton
Brooks, H. F.
Stoke Public Higher S., Devonport
Brown, A. B.
Stoke Public Higher S., Devonport
Brown, S. G.
Lindisfarne Coll., Westcliff-on-Sea
Browning, W. H. Gram. School, Streatham
Bruton, G. Salesian S., Battersea
Buksh, R.
St. Aloysius' Coll., Hornsey Lane, N.
Burch, J. D. The College, Weston-super-Mare
Buscarlet, W. A. B. Argyle H., Sunderland
Campbell, C. D. Argyle H., Sunderland
Carter, C. S.
Mannamead S., Walmer H., Plymouth
Casola, A. Christian Bros.' Coll., Gibraltar
Castle, L. N. The Douglas S., Cheltenham
Catton, J. E. Eastward Ho ! Coll., Felixstowe
Chatewin, A. C. Broadgate S., Nottingham
Cherry, G. Scorton Gram. S.
Cherry, W. R. Scorton Gram. S.
Chidley, P. E. A. New Coll., Herne Bay
Christie, G. All Saints' Choir S., Clifton
Christie, H. Margate College
Clarke, R.
St. Aloysius' Coll., Hornsey Lane, N.
Cleverdon, F. Gram. School, Mutley
Clifton, D. G. Tudor Hall, Hawkhurst
Coghlan, L. Salesian S., Battersea
Collinson, W. E. Endcliffe Coll., Sheffield
Colvin, D.
St. Aloysius' Coll., Hornsey Lane, N.
Constable, H. Arlington Villa S., Brighton
Cooper, F. W. Broadgate S., Nottingham
Cornes, E. L. Cheltonia College, Streatham
Cornish, W. O. Richmond Hill S., Richmond
Cortina, J. J.
St. Aloysius' Coll., Hornsey Lane, N.
Cotterill, H. S.
Hillmartin Coll., Camden Road, N.W.
Couch, A. L.
Stoke Public Higher S., Devonport
Coutinho, R.
Marist Brothers' Coll., Grove Ferry
Crawford, G. D.
Stoke Public Higher S., Devonport
Crundall, W. F. Tudor Hall, Hawkhurst
Curt, P. E. St. John's Coll., Brixton
Dalal, J. J. St. Catherine's Coll., Richmond
Dalziel, W. Osborne High S., West Hartlepool
Damerell, H. G.
Stoke Public Higher S., Devonport
Darke, R. J. New Coll., Herne Bay
Davenport, W. F.
Cheltonia College, Streatham
Davidson, J. T.
Wincobank, Cliftonville, Margate
Davis, H. C. Gram. School, Clapham
Davison, R. W. Orrington H., Belfast
Day, L. A. Gram. School, Taplow
de Freitas, J. S.
St. Aloysius' Coll., Hornsey Lane, N.
Denham, W.
Lindisfarne Coll., Westcliff-on-Sea
Dennis, G. N.
Osborne High S., West Hartlepool
Diplock, A. T.
Wincobank, Cliftonville, Margate
Dodgson, H. R. The Haughton School, York
Donnellan, P.
Conv. La Sainte Union, Banagher
Douglas, W. T. L.
Stoke Public Higher S., Devonport
Dry, H. D. Lindisfarne Coll., Westcliff-on-Sea
Dudgeon, J. S. Princess Gardens S., Belfast
Dunham, H. Walsall Comm. Coll.
Dunnett, C. R. Eastward Ho! Coll., Felixstowe
Easten, G. T. Bede College, Whitley Bay
Edenborough, J. G.
Cheltonia College, Streatham
Eder, W. J. Lindisfarne Coll., Westcliff-on-Sea
Edwards, C. Salesian S., Battersea
Eglington, D. C. St. George's Coll., Weybridge
Elliot, F.
Victoria S., Heaton, Newcastle-on-Tyne
Elorriaga, S. Salesian S., Battersea
Emerson, F. J.
Northgate S., Bury St. Edmunds
Facio, F. Christian Bros.' Coll., Gibraltar
Fawcett, R. W. Gram. School, Taplow
Fernandez, P. Christian Bros.' Coll., Gibraltar
Field, R. P. Lindisfarne Coll., Westcliff-on-Sea
Figgins, H. H. Gram. School, Clapham
Figueirado, F. X. Springfield Coll., Acton
Fischer, H. W. J. Cheltonia College, Streatham
Fitzpatrick, C. D.
St. Aloysius' Coll., Hornsey Lane, N.
Forrest, B. Upholland Gram. S., Orrell
Francis, S. A. Gram. School, Clapham
Franklin, F. C. All Saints' Choir S., Clifton
Freeland, H. W. Bethany H., Goudhurst
Fry, H. D. New Coll., Herne Bay
Fyffe, L. D. E. Grove H., Highgate
Gale, A. C. Richmond Hill S., Richmond
Galpin, L. P. Leyland House, Southport
Gellan, K. A. Margate College
Gigli, A. St. Aloysius' Coll., Hornsey Lane, N.
Gilbert, A. Christian Bros.' Coll., Gibraltar
Gill, H. R. Endcliffe Coll., Sheffield
Gill, J. E. Endcliffe Coll., Sheffield
Goldon, T. Conv. La Sainte Union, Banagher
Gorrill, D. G. S. Bede College, Whitley Bay
Grant, E. S. Tudor Hall, Hawkhurst
Green, R. M. Bethany H., Goudhurst
Greenwell, R. A. Argyle H., Sunderland
Greter, J. W. Margate College
Griffin, N. J. Endcliffe Coll., Sheffield
Gye, A. D. Lindisfarne Coll., Westcliff-on-Sea
Haben, E. F. T.
Stoke Public Higher S., Devonport
Hall, J. A. Margate College
Hall, R. Salesian S., Battersea
Hallam, E. L. E. Endcliffe Coll., Sheffield
Hannan, J. W.
Conv. La Sainte Union, Banagher
Haptie, L. Ballure H., Great Crosby
Harding, J. Margate College
Harpur, F. 37 Lisburn Rd., Belfast
Harrison, E. C. Claremont H., Sunderland
Harvey, V. W.
Stoke Public Higher S., Devonport
Heather, P.
St. Aloysius' Coll., Hornsey Lane, N.
Heaton, G. A. Upholland Gram. S., Orrell
Herbert, S. Stoke Public Higher S., Devonport
Hill, F. C. Stoke Public Higher S., Devonport
Hill, H. N. Broadgate S., Nottingham
Hirst, S. E. Stafford Coll., Forest Hill
Hollinrake, R. M. Bethany H., Goudhurst
Horncastle, C. C. S.
Lindisfarne Coll., Westcliff-on-Sea
Hubble, H. L. Broadgate S., Nottingham
Hunter, A. J.
Osborne High S., West Hartlepool
Hunter, S. H.
Osborne High S., West Hartlepool
Hutchinson, W. H. Stafford Coll., Forest Hill
Hutton, D. J. Argyle H., Sunderland
Hutton, L. Christian Bros.' Coll., Gibraltar
Hyrons, R. A.
Lindisfarne Coll., Westcliff-on-Sea
Jackson, E. D.
Lindisfarne Coll., Westcliff-on-Sea
Jaco, R. Mount Radford S., Exeter
Jacob, H. Marist Brothers' Coll., Grove Ferry
Jakins, W. V.
Lindisfarne Coll., Westcliff-on-Sea
James, W. Gram. School, Streatham
Jenks, J. C. The College, Weston-super-Mare
Johns, W. J.
Stoke Public Higher S., Devonport
Jones, L. H.
Lindisfarne Coll., Westcliff-on-Sea
Joyce, G. Salesian S., Battersea
Kaltenbach, F. E.
St. Aloysius' Coll., Hornsey Lane, N.
Kane, F. Salesian S., Battersea
Kaye, C. F. St. G. Grammar S., Taplow
Keene, L. G. The Douglas S., Cheltenham
Kehler, P. J.
Lindisfarne Coll., Westcliff-on-Sea
Kelk, N. T. Leyland House, Southport
Kelly, J. S. Leyland House, Southport
King, F. Northgate S., Bury St. Edmunds
King, P. A. St. John's Coll., Brixton
Kingdon, A. V.
Stoke Public Higher S., Devonport
Kirkham, L. J. The Douglas S., Cheltenham
Kitching, E. M.
Osborne High S., West Hartlepool
Knowles, H. A.
Stoke Public Higher S., Devonport
Kornweibel, T. F.
St. George's Coll., Weybridge
La Haye, J. Salesian S., Battersea
Lamb, W. C. 343 Antrim Road, Belfast
Lambert, E. Gram. School, Streatham
Lancaster, A. H. Balham School
Lancaster, W. N. Stafford Coll., Forest Hill
Latimer, C. H. Scorton Gram. S.
Laver, F. K. New Coll., Herne Bay
Law, E. W. Grove H., Highgate
Leader, S. Hounslow College, Hounslow
Leahy, J. M.
St. Aloysius' Coll., Hornsey Lane, N.
Lees, L. W. Lindisfarne Coll., Westcliff-on-Sea
Lensh, H. F.
St. Aloysius' Coll., Hornsey Lane, N.
Leopard, J. H.
Lindisfarne Coll., Westcliff-on-Sea
Lewin, C. G. E. K.
Lindisfarne Coll., Westcliff-on-Sea
Linton, S. Ramsgate College
Lloyd, F. A. Northgate S., Bury St. Edmunds
Lloyd, F. T. Bethany H., Goudhurst
Lockhart, L. P. Cheltonia Coll., Streatham
Lofts, N. Eastward Ho ! Coll., Felixstowe
Lorns, L. W. G. Gram. School, Clapham
Lott, E. R. South Norwood College, S.E
Lowfte, M. F.
St. Aloysius' Coll., Hornsey Lane, N.
Lyons, R. C.
Stoke Public Higher S., Devonport
Mack, B. University School, Rochester
Mackenzie, A. D. F.
Lindisfarne Coll., Westcliff-on-Sea
Maguire, J. A.
St. Aloysius' Coll., Hornsey Lane, N.
Malzer, J. G.
St. Aloysius' Coll., Hornsey Lane, N.
Marchant, C. V. Richmond Hill S., Richmond
Marsh, N. S. Upholland Gram. S., Orrell
Mason, C. J. Margate College
Mason, J. M. St. George's Coll., Weybridge
Massé, P.
Mannamead S., Walmer H., Plymouth
Massey, T. S.
Stoke Public Higher S., Devonport
Matthews, R. N. Endcliffe Coll., Sheffield
Maytham, R. P. St. George's Coll., Weybridge
McCartney, T.
Conv. La Sainte Union, Banagher
McKeever, S. St. George's Coll., Weybridge
McLaughlin, C. E.
St. Aloysius' Coll., Hornsey Lane, N.
Meddings, A.
St. Aloysius' Coll., Hornsey Lane, N.
Middleton, C. V. Durham H., Hove
Milner, G. Grammar School, Taplow
Mona, V. V.
St. Aloysius' Coll., Hornsey Lane, N.
Monnickendam, Marks
Margate Jewish College
Monnickendam, Morris
Margate Jewish College
Montgomery, R. L.
Northgate S., Bury St. Edmunds
Moorcraft, J. Salesian S., Battersea
Moore, A. E. Upholland Gram. S., Orrell
Morgan, J. K. Grove H., Highgate
Morgan, L. Claremont H., Sunderland
Morley, E. L. St. Catherine's Coll., Richmond
Morse, L. C. All Saints' Choir S., Clifton
Mozet, R. Marist Brothers Coll., Grove Ferry
Muir-Smith, J. E. Grove H., Highgate
Mundy, J. C. 51 Ditchling Rise, Brighton
Mundy, W. P. 51 Ditchling Rise, Brighton
Munro, A. E. Bede College, Whitley Bay
Murison, K. R.
Lindisfarne Coll., Westcliff-on-Sea
Neale, F. New College, Herne Bay
Nethercott, A. G.
Lindisfarne Coll., Westcliff-on-Sea
Noel, C. V. Arlington Villa S., Brighton
Novella, L. Christian Bros.' Coll., Gibraltar
O'Farrell, B. Conv. La Sainte Union, Banagher
Oliver, D. C. M.
Wincobank, Cliftonville, Margate
Ollington, E. E.
Northgate S., Bury St. Edmunds
Olsen, W. W.
Lindisfarne Coll., Westcliff-on-Sea
O'Shaughnessy, P. J.
St. Joseph's Conv., Mt. Sackville, Chapelizod
O'Shea, T. Salesian S., Battersea
Pacy, J. G. R. Argyle H., Sunderland
Parr, W. G. Lindisfarne Coll., Westcliff-on-Sea
Parsons, G. S. Bede College, Whitley Bay
Paul, H. A. Wincobank, Cliftonville, Margate
Pawson, C. H. Bede College, Whitley Bay
Peacock, H. M. Scorton Gram. S.
Pedersen, C. P. G.
St. Aloysius' Coll., Hornsey Lane, N.
Pennington, J. Leyland House, Southport
Pennington, W. A. Upholland Gram. S., Orrell
Percival, W. S.
Stoke Public Higher S., Devonport
Perrin, H. J.
Stoke Public Higher S., Devonport
Pfister, G. Salesian S., Battersea
Phillips, W. F. C. Grove H., Highgate
Pimienta, J. Christian Bros.' Coll., Gibraltar
Plunkett, J. R.
St. Aloysius' Coll., Hornsey Lane, N.
Podzemek, H.
St. Aloysius' Coll., Hornsey Lane, N.
Pollard, J. C. Durham H., Hove
Pollard, R. Endcliffe Coll., Sheffield
Porter, F. G. Carden S., Peckham Rye, S.E.
Proctor, R. F.
Victoria S., Heaton, Newcastle-on-Tyne
Prynn, R. R.
Stoke Public Higher S., Devonport
Puckey, C. H.
Stoke Public Higher S., Devonport
Pullom, R. S. The Douglas S., Cheltenham
Purcell, F. C. Commercial S., Wood Green, N.
Pyke, C. C. J. Northgate S., Bury St. Edmunds
Rainbow, W. S.
Victoria S., Heaton, Newcastle-on-Tyne
Ratcliffe, P. J. S. Tudor Hall, Hawkhurst
Raven, R. F. Broadgate S., Nottingham
Rawlings, S. Richmond Hill S., Richmond
Rayner, E. F.
St. Aloysius' Coll., Hornsey Lane, N.
Reddy, T. H. Salesian S., Farnborough

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BOYS, LOWER FORMS—*Continued.*

Rees, H. G. P.
St. Catherine's Coll., Richmond
Reid, J. B. Stoke Public HigherS., Devonport
Rey de Castro, E. F.
St. George's Coll., Weybridge
Reynolds, B. T. St. John's Coll., Brixton
Richards, L. C.
St. Aloysius' Coll., Hornsey Lane, N.
Richards, N. Margate Jewish College
Richardson, M. T.
University School, Rochester
Rickards, L. Ramsgate College
Rigby, J. Salesian S., Battersea
Roberts, G. H. Endcliffe Coll., Sheffield
Robinson, R. G. St. John's Coll., Brixton
Rolles, N. Lindisfarne Coll., Westcliff-on-Sea
Rouilly, J. St. George's Coll., Weybridge
Rowe, M. W. All Saints' Choir S., Clifton
Rugeroni, A. J.
Christian Bros.' Coll., Gibraltar
Rushforth, G. Salesian S., Battersea
Russell, G. W. H. Endcliffe Coll., Sheffield
Sage, J. H. Grove H., Highgate
Savage, L. N. Bethany H., Goudhurst
Schilling, G. W. N.
Eastward Ho! Coll., Felixstowe
Schultheiss, J. T.
University School, Rochester
Scoones, D. A. Durham H., Hove
Scott, E. S. Northgate S., Bury St. Edmunds
Scrivener, E. E. Margate College
Selman, E. I. Margate Jewish College
Selman, H. D. Margate Jewish College
Sharpe, R. T. St. Catherine's Coll., Richmond
Shaw, T. Newquay College
Short, H. N.
Stoke Public Higher S., Devonport
Simmons, G. A.
St. Aloysius' Coll., Hornsey Lane, N.
Simon, A. W. Cheltonia College, Streatham
Singlit, H. A. Margate College
Slack, A. Endcliffe Coll., Sheffield
Small, J. D. Tudor Hall, Hawkhurst
Smith, E. D. Gram. School, Streatham
Smith, E. P. Carisbrooke Coll., Walthamstow
Smith, G. M. Gram. School, Taplow
Smith, G. S. S. Stafford Coll., Forest Hill
Smith, J. A.
Hillmartin Coll., Camden Road, N.W.
Spence, E. E. NorthgateS., BurySt. Edmunds
Spiller, A. N.
Stoke Public Higher S., Devonport
Spillman, W. L.
Stoke Public Higher S., Devonport
Spink, S. G. St. John's Coll., Brixton
Squier, P. R. Richmond Hill S., Richmond
Starling, L. B. Ellesmere Coll. S., Cheltenham
Stephenson, E.
Osborne High S., West Hartlepool
Stimpson, R. E. Broadgate S., Nottingham
Stonham, G. E. Bethany H., Goudhurst
Strike, A. J. Stoke Public HigherS., Devonport
Stubbs, A. E. St. John's Coll., Brixton
Sturdy, W. A. The Haughton School, York
Sullivan, F. H.
Stoke Public Higher S., Devonport
Susman, M. W. Margate Jewish College
Swainston, G. H. The Douglas S., Cheltenham
Symonds, L. S. Eastward Ho! Coll., Felixstowe
Tansley, W. J. Bethany H., Goudhurst
Taylor, H. C.
St. Aloysius' Coll., Hornsey Lane, N.
Thomas, S. T. Gram. School, Mutley
Tice, S. W. R.
Pemberton Coll., Upper Holloway
Tiffen, G. Arlington Villa S., Brighton
Tindall, E. L.
The College, Weston-super-Mare
Titmas, J. F. South Norwood College, S.E.
Toller, G. Ramsgate College
Tooker, J. T.
Stoke Public Higher S., Devonport
Torr, J. A. Stoke Public HigherS., Devonport
Townshend, D. Ramsgate College
Townshend, R. Ramsgate College
Tozer, D. C. E. Gram. School, Mutley
Treleaven, J. C. Gram. School, Mutley
Trevarrow, J. P. Newquay College
Tristam, E. B. St. George's Coll., Weybridge
Trivett, L. L. Broadgate S., Nottingham
Tucker, W. A.
Stoke Public Higher S., Devonport
Turnbull, T. H. Bethany H., Goudhurst
Turner, C. B. University School, Rochester
Turner, E. F. Grove H., Highgate
Twomey, E. J.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Tye, E. G. Tudor Hall, Hawkhurst
Vaughan, L. T. Gram. School, Taplow
Verano, M. Christian Bros.' Coll., Gibraltar
Verinder, E. Gram. School, Streatham
Vernon, G. C.
Hillmartin Coll., Camden Road, N.W.
Vincent, F. L. Gram. School, Mutley
Vincent, H. O. W. Argyle H., Sunderland
Wakley, H. T.
Stoke Public Higher S., Devonport
Walsh, B. C. St. Joseph's Conv., Mount Sackville, Chapelizod
Walters, T. B.
St. Aloysius' Coll., Hornsey Lane, N.
Walton, G. J. The Douglas S., Cheltenham
Walton, H. The College, Weston-super-Mare
Watson, S. L. Bethany H., Goudhurst
Watts, E. G. S. All Saints' Choir S., Clifton
Weller, W. R. St. John's College, Brixton
Westmoreland, W. H. J.
Tudor Hall, Hawkhurst
Wheatley, W. Salesian S., Battersea
Wheeler, A. Salesian S., Battersea
Wheeler, M. Gram. School, Taplow
Whitehead, J. Bede Coll., Whitley Bay
Whitmore, A. T.
Northgate S., Bury St. Edmunds
Whitmore, B. G.
Lindisfarne Coll., Westcliff-on-Sea
Wickham, J.
St. Aloysius' Coll., Hornsey Lane, N.
Wilkins, J. L. Gram. School, Streatham
Willett, J. W.
Lindisfarne Coll., Westcliff-on-Sea
Williams, A. H. Bethany H., Goudhurst
Williamson, C. J. Bethany H., Goudhurst
Willson, L. H. Margate College
Winchester, C. C.
St. Aloysius' Coll., Hornsey Lane, N.
Winn, E. St. John's Coll., Brixton
Wintrip, H. R. Bede Coll., Whitley Bay
Wood, A. E. D. Bethany H., Goudhurst
Wood, A. W. Bethany H., Goudhurst
Woodward, N. Gram. School, Streatham
Woodward, T.
The College, Weston-super-Mare
Woodward, W. T.
Eastward Ho! Coll., Felixstowe
Worley, L. R.
Osborne High S., West Hartlepool
Youatt, L. F. St. George's Coll., Weybridge
Young, E. D. The Modern S., East Grinstead
Zahringer, F.
St. Aloysius' Coll., Hornsey Lane, N.

GIRLS.

Adam, R. Rhianva Coll., Hunstanton
Adams, D. E. M. Private tuition
Ahern, C.
St. Mary's Conv. of Mercy S., Buttevant
Alcock, V. K. The Friends' S., Mountmellick
Anthony, N. J. St. Mary's Conv., Chelsea
Armitage, C. A. Kensington H., York
Armstrong, S. C.
Upper St. Leonards Ladies' Coll.
Ashby, E. M. Margate Ladies' Coll.
Astle, M. Lowther Coll., Lytham
Auburn, K. Norfolk H., Muswell Hill, N.
Back, R. V. St. Hilda's Coll., Clifton, Bristol
Badcock, R. Margate Ladies' Coll.
Bailey, E. Anby House Coll., West Hackney
Ball, B. Upholland Gram. S., Orrell
Banks, L. M. Newlands High S., Heaton Moor
Barker, A. Westcliff S., Southport
Barmby, E. A.
Southolme High S., Whalley Range
Barnes, G. S. Carden S., Peckham Rye, S.E.
Barnett, J. Somerset H., Ramsgate
Barrogi, H. St. Mary's Conv., Chelsea
Barry, L. St. Mary's High S., Midleton
Barry, M. F. St. Mary's High S., Midleton
Bartram, J. A. Palmer's Green High S., N.
Batchelor, M. Annecy Conv., Seaford
Beatty, L. Dominican Conv., Cabra, Dublin
Behar, V. Margate Jewish College
Bell, E. Conv. La Sainte Union, Banagher
Bendall, C. J. Walford Coll., Tipton
Bendall, E. G. Walford Coll., Tipton
Bennett, D. Birr Convent of Mercy
Bensted, H. M. Southoe H., Richmond
Bernstein, E. E.
Mansfield H. Ladies' C., Cliftonville, Margate
Best, D. E. Holmcroft, Bromley
Blackhurst, M. M.
Girls' S., Promenade, SouthShore, Blackpool
Blake Forster, G.
Conv. La Sainte Union, Banagher
Bland, Q.
Notre Dame High S., Clapham Common
Boss, I. R. Brook Green Girls' Coll., W.
Braddick, D. M. Palmer's Green High S., N.
Braddon, M. N. D.
Carisbrooke Coll., Walthamstow
Branney, J. St. Mary's High S., Romford
Bransfield, C. St. Mary's High S., Midleton
Brazill, K. St. Paul's Conv. S., Kilfinane
Brearley, D.
Wincham Hall Coll., Lostock Gralam
Brennan, M. G. 39 Lisburn Rd., Belfast
Brewitt, J. M. The Modern S., Melton Mowbray
Bridge, D. Ballure House, Gt. Crosby
Bridge, E. Lowther College, Lytham
Brill, G. E. Cranley H., Muswell Hill
Brown, M. Moreland H., Albany Rd., Bexhill
Bryson, W. M.
Carisbrooke Coll., Walthamstow
Buckley, J. Sacred Heart S., Kanturk
Buckley, N. Sacred Heart S., Kanturk
Buckwell, D. W. St. Mary's Coll., Barnes
Buggy, F. Sacred Heart S., Kanturk
Bunker, G. M. Frankfort HighS., Forest Hill
Bunney, V.
Convent High S., The Avenue, Southampton
Burgess, S. The College, Goudhurst
Burgin, G. N. St. Mary's Coll., Barnes
Burns, A. K. St. Mary's Conv., Chelsea
Burns, M. St. Mary's Conv., Bruff
Burns, M. J. Convent F.C.J., Fallowfield
Burrell, K. Private tuition
Burrows, M.
Southolme High S., Whalley Range
Byrne, E. Dominican Conv., Cabra, Dublin
Byrne, T. Dominican Conv., Cabra, Dublin
Cahill, M. Milton H., Maidstone
Cameron, J. Highfield Coll., Bispham
Candy, K. St. Mary's Conv. Bruff
Canham, W. Marist Convent S., Tottenham
Capato, C. A. Margate Ladies' Coll.
Carroll, M. Dominican Conv., Cabra, Dublin
Carver, D. I. M. Brook Green Girls' Coll., W.
Cavanagh, T.
Notre Dame High S., Clapham Common
Cheshire, A.
Notre Dame High S., Clapham Common
Clark, A. Upholland Gram. S., Orrell
Clark, T. Loreto Conv., Europa, Gibraltar
Clery, S. Dominican Conv., Cabra, Dublin
Clough, E. Lowther College, Lytham
Coghlan, M.
St. Mary's Conv. of Mercy S., Buttevant
Cole, E. St. Ursula's S., Westbury-on-Trym
Colquohoun, R.
Wincham Hall Coll., Lostock Gralam
Colson, D. Lowther Coll., Lytham
Connolly, M.
Conv. of Mercy, Clifford, Boston Spa
Connor, M. K. Margate Ladies' Coll.
Cooper, K. Holly Bank, Frodsham
Coram, E. M. Brook Green Girls' Coll., W.
Coster, F. M. Newlands HighS., Heaton Moor
Court, G. A. Southoe H., Richmond
Cowderoy, P. The College, Goudhurst
Cowdroy, M. D. Elm H., Ealing
Crabtree, F. D. Froebel Coll. S., Spalding
Craig, M. E. D. Intermediate S., Ballyclare
Cremen, M. St. Mary's Conv. S., Charleville
Cubitt, D.
St. Hildred's, Craneswater Park, Southsea
Cummins, M. Sacred Heart S., Kanturk
Cunliffe, A. C.
Girls' S., Promenade, SouthShore, Blackpool
Curran, B. Dominican Conv., Cabra, Dublin
Curran, M. Ava Girls' Coll. S., Belfast
Cusack, M. St. Mary's Conv., Bruff
Cussen, E. St. Mary's Conv. S., Charleville
Cussen, M. St. Mary's Conv. S., Charleville
Cuthbert, E. F. Palmer's Green High S., N.
Dallas, J. E. Kensington H., York
Daly, L. St. Paul's Conv. S., Kilfinane
Darey, B. Dominican Conv., Cabra, Dublin
Davis, E.
Franciscan Conv. S., Melton Mowbray
Davis, G. L.
Montpellier Coll., Budleigh Salterton
de la Motte, V.
Franciscan Conv. S., Melton Mowbray
Delany, E. M. F. Convent F.C.J., Fallowfield
Delassus, J. Annecy Conv., Seaford
Demerssessian, A. I.
English High S., Pera, Constantinople
Devon, G. Princess Gardens S., Belfast
Devon, M. E.
Girls' S., Promenade, South Shore, Blackpool
Dewe, G. S. Upper St. Leonards Ladies' Coll.
D'Hont, G. Milton H., Maidstone
Diamondstein, D.
Anby House Coll., West Hackney
Dickson, M. Private School, Comber
Dixon, D.
Notre Dame High S., Clapham Common
Donnelly, M.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Dooley, K. Birr Convent of Mercy
Dougherty, G.
Conv. of Mercy, Clifford, Boston Spa
Downes, A. Dominican Conv., Cabra, Dublin
Doyle, M.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Duffy, F.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Duggan, G.
St. Ursula's S., Westbury-on-Trym
Duggan, K. St. Mary's Conv., Bruff
Dunn, E. J.
Chetwin H., Hurworth, Darlington
Dunne, A.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Durrant, W. E. L.
Melbourne Coll., Thornton Heath
Eastwood, M. Lowther Coll., Lytham
Elliott, W. St. Mary's High S., Romford
Ellis, E. M. S. Hilda's Coll., Clifton, Bristol
Elmer, M. P. St. John's H., Felixstowe
Emerton, N. P.
Woodside, St. Helen's Pk., Hastings
Enright, M. St. Mary's Conv., Bruff
Ensor, V.
North Kensington Coll. S., Notting Hill
Fairweather, M.
Carlyle Coll., Clapham Common
Fanagan, N. Dominican Conv., Cabra, Dublin
Farrington, A. High School, Cork
Farrow, W. Annecy Conv., Seaford
Faulkner, I. V. A. Alwyne Coll., Canonbury
Feltham, E. M. Private tuition
Ferguson, M. Intermediate S., Ballyclare
Fidler, F. Oriel Bank High S., Davenport
Field, H. Milton H., Maidstone
Finch, D. M. E. St. Mary's Coll., Barnes
Finlay, W. Frankfort High S., Forest Hill
Finucane, F.
Franciscan Conv. S., Melton Mowbray
Fitzgerald, K.
Dominican Conv., Cabra, Dublin
Fitzgerald, M. St. Mary's High S., Midleton
Flanagan, M. J.
Conv. La Sainte Union, Banagher
Flanagan, N.
Conv. La Sainte Union, Banagher
Fleming, B. Intermediate S., Ballyclare
Fletcher, G. Private tuition
Foley, M. Conv. La Sainte Union, Banagher
Forth, B. M. Princess Gardens S., Belfast
Fox, E.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Fox, I. St. Paul's Conv. S., Kilfinane
Franklin, M. St. Agnes' S., Willesden
Fraser, E. H. Private tuition
Frayne, M. K.
Conv. La Sainte Union, Banagher
Frecknall, E. M. West End S., Lymington
Freeman, K. The Southend S., Winchester
Freemantle, D. M. Beaulieu S., Swanwick
Frost, L. K.
Southolme High S., Whalley Range
Galsworthy, C. M.
Mall Road Girls' S., Hammersmith
Geary, M. St. Mary's Conv., Bruff
Gettler, B. Meredith H., Lichfield
Gilbey, H. St. Mary's High S., Romford
Goldreich, M. Norfolk H., Hexley
Goring, J. V. K. University S., Rochester
Gormley, W.
Franciscan Conv. S., Melton Mowbray
Gornall, D.
Girls' S., Promenade, South Shore, Blackpool
Gracey, M. G. Palmer's Green High S., N.
Graham, M. E.
Wincham Hall Coll., Lostock Gralam
Gray, D. Lowther Coll., Lytham
Gray, V.
Convent High S., The Avenue, Southampton
Green, E. Lowther Coll., Lytham
Greene, M. St. Mary's High S., Midleton
Greenaway, B. St Agnes' School, Willesden
Grierson, E. A. Private tuition
Grimshaw, D.
Girls' S., Promenade, South Shore, Blackpool

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GIRLS, LOWER FORMS—*Continued.*

Grüneberg, J.
Mansfield H. Ladies' C., Cliftonville, Margate
Guinee, K. Sacred Heart S., Kanturk
Hack, A. The Modern S., Melton Mowbray
Hackman, S. St. Mary's Coll., Barnes
Hall, D. Lowther Coll., Lytham
Halliday, W. M. The Friends' S., Mountmellick
Halstead, H. M.
Girls' S., Promenade, South Shore, Blackpool
Hamar, H. Milton H., Maidstone
Hammond, C. A. The Southend S., Winchester
Hankin, I. L. Upholland Gram. S., Orrell
Harman, I. L. Palmer's Green High S., N.
Harton, M. St. Mary's High S., Midleton
Harty, D. M.
English High S., Pera, Constantinople
Harvey, A. The College, Goudhurst
Hayes, M. St. Mary's Conv., Bruff
Hayward, P.
Notre Dame High S., Clapham Common
Heald, V. E. Newlands High S., Heaton Moor
Heaton, E. Upholland Gram. S., Orrell
Hemmingway, M. M. Lark Hill H., Preston
Hewitt, A. Inglewood, Mobberley
Hiam, I. S. Northfield, Stamford Hill, N.
Hicks, D. C. Carisbrooke Coll., Walthamstow
Hilton, J. Lowther Coll., Lytham
Hitchens, R. W. Palmer's Green High S., N.
Hoare, A.
St. Joseph's Conv., Mt. Sackville, Chapelizod
Hodson, A. Convent F.C.J., Fallowfield
Hogan, K. St. Mary's High S., Romford
Hope, N. F.
Wincham Hall Coll., Lostock Gralam
Horgan, K. Sacred Heart S., Kanturk
Horsley, D. G.
Girls' S., Promenade, South Shore, Blackpool
Houghton, L. M. Private tuition
Howard, M. M. Lark Hill H., Preston
Hughes, E. The Southend S., Winchester
Hughes, L. C. P.
Southolme High S., Whalley Range
Hughes, W. G.
Wellesley Terrace S., Liverpool
Hughes-Dowling, E.
Conv. La Sainte Union, Banagher
Hunt, T. A. Northfield, Stamford Hill, N.
Hunter, A. B. Princess Gardens S., Belfast
Hunter, D. E. B. Private tuition
Hunter, M. M. St. Mary's Conv. Day S., York
Iliff, K. M. 13 Stone Street, Gravesend
Imossi, A. Loreto Conv., Europa, Gibraltar
Imossi, E. Loreto Conv., Europa, Gibraltar
Inayetian, A. M.
English High S., Pera, Constantinople
Jackson, E. L. I.
Wincham Hall Coll., Lostock Gralam
Jackson, L. The College, Goudhurst
Jackson, M. R. The Friends' S., Mountmellick
Jacobs, G.
Mansfield H. Ladies' C., Cliftonville, Margate
Jefferys, M.
Conv. of Mercy, Clifford, Boston Spa
Jenkinson, H. G.
Hornchurch High S., Hornchurch
John, E. N. G. Rhyl S., Bridgend
Johnson, E. Milton H., Maidstone
Johnston, A. D. Private S., Comber
Johnston, E. D.
Knock Inter. S. and Kindergarten, Lalghar
Jones, M. St. Mary's High S., Romford
Kearney, N. St. Mary's Conv. S., Charleville
Keighley, E. A. Lark Hill H., Preston
Keir, K. Milton H., Maidstone
Keller, L.
Notre Dame de France, Leicester Sq, W.C.
Kennedy, M. St. Mary's Conv., Bruff
Keogh, A. Dominican Conv., Cabra, Dublin
Kepple, J. Dominican Conv., Cabra, Dublin
Kerr, B. High School, Cork
Killeen, M.
St. Joseph's Conv., Mt. Sackville, Chapelizod
King, K. M. Girls' High S., Highbridge
King, M. R. L. York Coll., Swanley Junction
Knight, G. The College, Goudhurst
Lake, O. D.
Montpellier Coll., Budleigh Salterton
Laurie, P. K.
Woodside, St. Helen's Pk., Hastings
Lawson, M. A. The Friends' S., Mountmellick
Lawson, M. L. A. Northfield, Stamford Hill, N.
Ledbrook, L. M. Margate Ladies' Coll.
Levy, R.
Mansfield H. Ladies' C., Cliftonville, Margate
Lewis, W.
Notre Dame High S., Clapham Common
Liddell, M. K. Ebley H., East Putney
Lilley, K.
Convent High S., The Avenue, Southampton
Logan, E. Intermediate S., Ballyclare
Logan, M. Intermediate S., Ballyclare
Lush, I. J. G.
Woodside, St. Helen's Pk., Hastings
Lynch, W. St. Mary's High S., Midleton
Mack, M. Upholland Gram. S., Orrell
Maclennan, W. J. Private tuition
Maguire, H. Dominican Conv., Cabra, Dublin
Maher, M. Dominican Conv., Cabra, Dublin
Maile, V. K. Cranley H., Muswell Hill
Makin, A. M. Upholland Gram. S., Orrell
Malone, M. Dominican Conv., Cabra, Dublin
Marks, L. St. Mary's Conv., Chelsea
Martin, A. E. Walford Coll., Tipton
Masterson, E.
Franciscan Conv. S., Melton Mowbray
Masterson, L.
Franciscan Conv. S., Melton Mowbray
Mauger, R.
St. Hildred's, Craneswater Park, Southsea
Maymon, F. Fair Bank, Fulwood
Mayne, E. K. I. Private tuition
McCabe, J. Dominican Conv., Cabra, Dublin
McCarthy, L. St. Mary's High S., Midleton
McCarthy, M. St. Mary's Conv. S., Charleville
McCartney, M. A.
Conv. La Sainte Union, Banagher
M'Cormick, C. 39 Lisburn Road, Belfast
McCornish, K. A. Norfolk H., Muswell Hill, N.
McDermott, K.
Dominican Conv., Cabra, Dublin
McDonald, J. C.
Knock Inter. S. & Kindergarten, Lalghar
McEvoy, M. Dominican Conv., Cabra, Dublin
McGregor, E. St. Mary's High S., Midleton
Mitchell, E. Ballure H., Gt. Crosby
Mitchell, E. A. Holmcroft, Bromley
Molloy, E. Birr Convent of Mercy
Moloney, H. St. Mary's Conv. S., Charleville
Moloney, N. St. Mary's Conv. S., Charleville
Monkton, H. M. Holmcroft, Bromley
Montgomery, A. Intermediate S., Ballyclare
Mooney, M. Dominican Conv., Cabra, Dublin
Moore, E.
Convent High S., The Avenue, Southampton
Morley, M. J. Palmer's Green High S., N.
Morrin, M. Dominican Conv., Cabra, Dublin
Morris, H. M. St. Mary's Conv., Chelsea
Morris, S. M. N.
Montpellier Coll., Budleigh Salterton
Moss, A. Stretton House, Fleetwood
Muller, M. M.
Southolme High S., Whalley Range
Murnane, N. St. Mary's High S., Midleton
Murphy, M. Stretton H., Fleetwood
Murray, M. Ballure H., Gt. Crosby
Murray, M. S. Oakdene, Worsley, Manchester
Nevett, D. Fair Bank, Fulwood
Noble, D. A. L.
Wincham Hall Coll., Lostock Gralam
Noble, M. E.
Knock Inter. S. & Kindergarten, Lalghar
Noel, H. L. Arlington Villa S., Brighton
Nohilly, M. J.
Conv. La Sainte Union, Banagher
Nolan, D. Birr Convent of Mercy
Noonan, J.
St. Mary's Conv. of Mercy S., Buttevant
Nugent, K. Sacred Heart S., Kanturk
Oakford, D.
St. Ursula's S., Westbury-on-Trym
O'Brien, H. St. Mary's Conv. S., Charleville
O'Brien, K. D.
Shirley Avenue S., Southampton
O'Brien, M. St. Mary's High S., Midleton
O'Brien, Maggie
St. Mary's Conv. S., Charleville
O'Brien, May St. Mary's Conv. S., Charleville
O'Connell, K. Sacred Heart S., Kanturk
O'Connor, B. Sacred Heart S., Kanturk
O'Connor, E. Dominican Conv., Cabra, Dublin
O'Connor, K. St. Mary's Conv. S., Charleville
O'Connor, L. Dominican Conv., Cabra, Dublin
O'Donnell, A. St. Mary's Conv., Bruff
O'Gorman, A. St. Mary's Conv. S., Charleville
O'Leary, U. St. Mary's Conv., Bruff
O'Loughnan, J.
Dominican Conv., Cabra, Dublin
O'Mara, F. Dominican Conv., Cabra, Dublin
O'Neill, G. M. Convent F.C.J., Fallowfield
O'Neill, J. St. Mary's Conv., Bruff
O'Regan, B. St. Paul's Conv. S., Kilfinane
O'Reilly, R. Dominican Conv., Cabra, Dublin
O'Shea, N.
St. Mary's Conv. of Mercy S., Buttevant
O'Sullivan, K. St. Mary's High S., Midleton
Overton, P. I. Froebel Coll. S., Spalding
Pailthorpe, R. A.
Hornchurch High S., Hornchurch
Palfrey, J. Meredith H., Lichfield
Palmer, G. M. R. Valetta H., Saltash
Panter, L. Eastrop H., Chichester
Paxton, A. Chatwin H., Hurworth, Darlington
Peat, A. V. St. Mary's Conv. Day S., York
Pennington, M. Lowther Coll., Lytham
Phelan, M. E.
Dominican Conv., Cabra, Dublin
Phelps, W. I. Frankfort High S., Forest Hill
Pogue, A. Loreto Conv., Europa, Gibraltar
Powell, E. M. Holmcroft, Bromley
Prickett, D. K.
Cumberland H, Stoke Newington
Pupin, M. Annecy Conv., Seaford
Pyke, S. A. Lark Hill H., Preston
Quayle, E. Lowther Coll., Lytham
Reynolds, J. W. Orrington H., Belfast
Reynolds, N. Private tuition
Richards, D. M. St. Mary's Coll., Barnes
Richards, H. E. Rhianva Coll., Hunstanton
Richardson, M. E.
Roker Preparatory S., Sunderland
Ring, K. St. Mary's High S., Midleton
Robert, Y.
Notre Dame de France, Leicester Sq., W.C.
Robinson, F. M. Froebel Coll. S., Spalding
Rogers, D. St. Ursula's S., Westbury-on-Trym
Rohan, A. St. Mary's High S., Midleton
Rohan, M. E. St. Mary's High S., Midleton
Rose, D. E.
Hermitage Cottage, Upper Higham
Rose, M. Hermitage Cottage, Upper Higham
Royle, M. St. Mary's High S., Romford
Russo, R. Loreto Conv., Europa, Gibraltar
Ryan, L. St. Mary's Conv., Bruff
Ryan, M. Birr Conv. of Mercy
Sankey, A. Rhyl S., Bridgend
Scarlet, E. Southoe H., Richmond
Schnieder, E. The College, Goudhurst
Schofield, D. E.
Girls' S., Promenade, South Shore, Blackpool
Seed, B. Lowther Coll., Lytham
Sennett, M. M. The Friends' S., Mountmellick
Seymour, D. 22 Hillside Avenue, Mutley
Sharpe, F. I. Wellesley Terrace S., Liverpool
Sheppard, A. D. Bedford Hill Coll., Balham
Sheppard, V. W.
S. Hilda's Coll., Clifton, Bristol
Silvester, H. L. Beaulieu S., Swanwick
Singleton, M. Sacred Heart S., Kanturk
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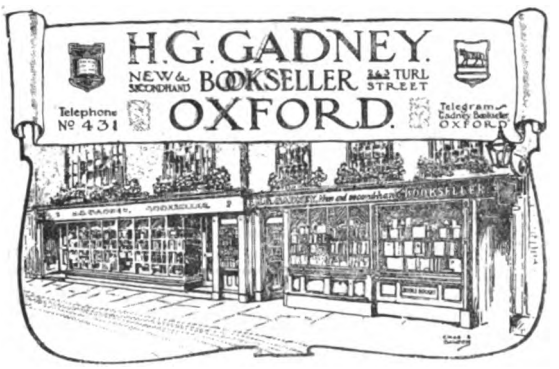

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The Educational Times.

Hegel as Educationist.

A SEASONABLE subject of meditation for holiday time is furnished by "Hegel's Educational Theory and Practice"—an able, painstaking, and interesting little volume by Mrs. Mackenzie, the Professor of Education at University College, Cardiff, which has just been published in soberly attractive form by Messrs. Swan Sonnenschein & Co. (3s. net.). It may be that there are "unmistakable signs of a growing demand for a more idealistic interpretation of education," in reaction from "philosophic positions which are utilitarian or realistic in character"; and it may be that there is a "large and increasing number of those who fail to find full satisfaction" in Herbart's precepts and practice ("the Herbartian philosophy" is a somewhat different affair). But, however that may be, we cordially welcome Mrs. Mackenzie's exposition, which "aims at bringing the educational views and work of Hegel under the notice of teachers and of others who believe that philosophy has a direct bearing upon life and education"—that is to say, of all of us that do any thinking on the subject of education at all. We do not anticipate that the claims of Hegel will cause any discomfort to the Herbartians. As Mrs. Mackenzie herself points out, there is no getting any one theorist to cover the whole ground; and none but narrow devotees will find any difficulty in applying the best counsels of both Herbart and Hegel without friction or collision. We bargain for peaceful co-operation, the emphasis varying with the value of each theorist's contribution to educational theory.

Mrs. Mackenzie reviews the life of Hegel with special reference to his early education and to his career as a schoolmaster. His Swabian origin may account for his union of meditative depth with energetic practicality; and the death of his mother when he was thirteen may have deepened his gravity and studious earnestness. From seven to seventeen he was a pupil at the Stuttgart Gymnasium, where the course of study was almost entirely linguistic and literary—too much linguistic, he himself records. For six years he was a private tutor; for seven more he was Privatdozent and Professor Extraordinarius at Jena; for another year he was a newspaper editor. It was not till he had passed his thirty-eighth year that he became Rector of the Nürnberg Gymnasium, where he laboured till he was close on forty-six. His real educational experience, then, must be placed in those seven and a half years. Indeed, "it is only by careful study of his general philosophical writings, his letters, and the addresses which he delivered as Rector of the Nürnberg Gymnasium, that we are able to discover and to piece together, as it were, the theory that underlay his practice." If "much of his pedagogy would be almost unintelligible unless studied in the light of his philosophic theory," and if, as Prof. J. S. Mackenzie tells us in his introductory note to the present volume, "there are very few who could affirm that they have grasped his significance," though "for several generations and in many lands—assuredly not least in ours—the attempt to understand him has been pursued with vigour," then we realize how precarious is the argument from his philosophy to his pedagogy. The relation of Herbart's philosophy to his pedagogy is a suggestive parallel. And, in any case, the dates of comparison require to be stringently kept in view. The main data must evidently be sought in the Nürnberg period. Hegel, strangely enough, left no special treatise on education.

Hegel, says Mrs. Mackenzie, "is one of the very few who have really succeeded in securing for education a clearly defined place in a philosophy of life, which is, after all, perhaps the most vital necessity for a true theory of education." It may be doubted whether the effacement of most other educationists is justified in order to place Hegel in so very splendid an isolation; but, anyhow, such was his educational outlook. "To Hegel the term education always implied a liberation—a liberation of the spirit implicit in man from the bonds of Nature—and is to be effected largely by man's own efforts, but in childhood and youth mainly through the help of parents, teachers, books, and other influences. This liberation implies the use of definite means—*e.g.*, instruction, discipline, &c., and the art of using these means he terms pedagogy. 'Pedagogy is the art of making man moral: it regards man as one with Nature and points out the way in which he may be born again, in which his first nature may be changed into a second—a spiritual nature—in such a way that the spiritual nature may become habitual to him.'" Education, then, is the process of con-

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verting a child from an implicitly rational to a consciously rational being. According to Hegel, "the principle of the universe is spiritual, and man is one with the universe, although not at first aware of this unity." Education, then, "appears as a necessary part of the process of realizing this unity of the individual with the higher, universal life, and is thus, in a sense, involved in the scheme of evolution." After all, the threatened Herbartian may ask how far the special theory of Hegel is necessary to the practical results. Admitting fully, as Mrs. Mackenzie puts it, that "self-conscious humanity owes it as a duty to each child born into the world that he shall be placed under suitable conditions of intellectual, moral, and physical growth," cannot this be done—is it not (at least attempted to be) done?—without any conscious regard to the specific philosophical theory of Hegel? We are all for the dispersion of ignorance, for the awakening of the child's mind, for his fullest appreciation of his relations to the world about him; but is Hegel's particular view a necessity of educational salvation? If not, is it anything more than a particular philosophical expression of what everybody means by education, or, at any rate, of what is attained by the usual—even the Herbartian—processes?

On the importance attached by Hegel to education in general, however expressed, there need be no disagreement. In natural course we come to the period—say the stage of secondary school education, the stage most familiar in practice to Hegel—when "the full life of the community and the State becomes possible to the individual as he breaks away from the limitations of his pure natural individual life—loses himself to find himself once more in the great life of the world." "It is this belief in the necessity for self-estrangement—of losing one's life to find it—of breaking away from the natural in order to become at home in the intellectual and the spiritual, that distinguishes Hegel's point of view from that of others who have applied the idea of evolution to education." Well, but does this really mean more than that a boy's thinking expands as he grows—that he has to do more thinking in the secondary than in the elementary school? True, Hegel regards it as absolutely necessary that the boy should realize that the process of self-estrangement has taken place. But, if the demand for separation is, as Hegel says, "so necessary that it shows itself in us as a universal and well known and recognized impulse," and if it has actually taken place, is it very likely that the boy fails to realize the change? In the main, it is to be remarked, this self-estrangement is an intellectual process only: "the world of feeling is left undisturbed, nothing should be allowed to interfere with those 'individual bonds which unite soul and spirit, feeling and thought, in holy friendship with life, faith, love, and trust.'" Is this indeed wise counsel? And in any case will the inner world of feeling obligingly rest quiescent—at any rate in regions not under German discipline?

Our classical friends will rejoice that Hegel regarded the classics "as offering best opportunities for self-estrangement"—there is no malicious intention in the expression—"and at the same time an almost endless store of noble thoughts and ideas" (the less worthy authors and passages being, no doubt, judiciously put away). "It is pretty certain that Hegel considered that a thorough classical education made the best possible basis for every kind of professional work"—a hard saying for the modern world. However, while insisting on a sound linguistic foundation, he was chiefly concerned for the moral and intellectual training and the mastery of the literature. Our Moral Educationists will rejoice that he found moral and religious instruction (including the beginnings of philosophy) feasible, and capable of affording guidance and inspiration as well as intellectual training. Indeed, he consistently gave the first place to "those subjects which had most direct bearing upon the development of intellect and character." Still, he had an open mind for other subjects, and "did all he could to encourage the introduction of more practical science work in his school, and that in spite of the fact that it was essentially a classical school." Unfortunately, "there is nothing to indicate that Hegel had any special teaching devices"—any method distinct from the current German practice.

Of course, all educationists will be interested to follow the details in Mrs. Mackenzie's attractive book—details necessary to clothe the mere skeleton of principles to which we have referred. It is to be considered, also, how far Hegel's known or inferred principles would have been extended in application under new developments. A mind like his would not have failed to respond to the fresh facts and views that have come into educational prominence since his time. Meantime we are grateful to Mrs. Mackenzie for definitely presenting Hegel in the educational arena, and hope that her exposition will be widely read and pondered.

NOTES.

Sir Philip Magnus did good service in heading the very influential deputation to the Chancellor of the Exchequer from the Secondary Schools Association (supported far more widely than actually represented by schools) on the effect of the proposed land taxes on the income, present and prospective, of endowed schools. Clause 25 of the Finance Bill, as modified by the amendments tabled by the Chancellor of the Exchequer, would read thus:

(1) No reversion duty or undeveloped land duty under this Part of this Act shall be charged in respect of land or any interest in land held by any governing body constituted for charitable purposes, while the land is occupied and used by that body for the purposes of that body, and increment value duty shall not be collected on any periodical occasion in respect of any such land or interest in land held for the purposes of such a body, whether it is occupied or used by that body or not, without prejudice, however, to the collection of the duty on any other occasion. The expression "governing body constituted for charitable purposes" includes any person or body of persons who have the right of holding, or any power of government of, or management over, any property appropriated for charitable purposes.

(2) This section shall apply to land held by a registered society as if the purposes of the society were charitable purposes. In this provision the expression "registered society" means any society or body of persons who are registered, or whose rules are certified or registered, by a Registrar of Friendly Societies in pursuance of any Act of Parliament, and who are restricted by their rules from dividing any part of their funds amongst their members.

Sir Philip Magnus pointed out clearly and cogently that the three land taxes would seriously affect the income of a large number of secondary schools, and would to that extent lessen the efficiency of the education they now provide; and he asked that the property of such schools in land should be quite unambiguously and wholly exempted from the opera-

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tion of Part I. of the Finance Bill. Sir William Anson urged the importance of the surroundings of the great public schools for the health and character of the boys, the uncertainty of the amount of the proposed tax on undeveloped land, and the contrast between the contribution of the Government to secondary and to elementary education. Other speakers drove home the injury likely to be done to the efficiency of the schools. Sir Robert Chalmers, who attended in place of Mr. Lloyd George, who was inevitably detained in the House, expressly reassured the deputation that playgrounds would be excluded from taxation; but he was unable to say anything as to property beyond premises in actual use for school purposes. Meantime the consideration of Clause 25 is postponed. There can be little doubt, however, that the contentions of the deputation will prevail. Educational bodies that exist for public purposes and for the benefit of the community as a whole, and not for private profit, ought certainly to be exempt from taxation.

Lord Morley has received a chorus of approval for establishing a bureau for the supervision and direction of Indian students resident in London. There can be no doubt that there ought to be some institution, or at any rate some person or persons invested with responsibility, for the guidance of Eastern students temporarily here. The environment is very different from what they have been accustomed with; the experience and judgment and self-control of many of the young men, never before tested, are exposed to severe trials; and the effects of lapse are easily disastrous. We trust, of course, that Lord Morley's plan will be thoroughly successful. The men that come over with scholarships—say forty or fifty, in the meantime—will practically have no option but to report themselves and to keep in formal touch with the official bureau: the authorities that send them will see to that, and the Indian Government will see that they see to it. But will there be attendance where there is no compulsion? That is to say, will the great majority of Indian students have recourse to the bureau? And if not, how can it be regarded as a success? No Englishman will doubt the general competence or the fairmindedness of the Educational Adviser. But the facts remain that his experience in India was in connexion with a Mohammedan institution; that the recent official favour of Mohammedans is silently resented by many Hindus and others; and that officialism in every form is suspect and avoided. We do not know how far such feelings of Indian students are made known to Lord Morley, but there they are, and they have to be reckoned with. The judicious management of the bureau may do much to overcome eventually the distrust that now exists—a distrust that is very intelligible under present conditions, and that has nothing to do with disloyalty or sedition or revolution. In the Inns of Court, where the largest numbers of Indian students congregate, it would hardly be possible to find a man that is disloyal; but it would be equally difficult to find a man that is not "agin the Government." The new institution offers no cure for reasoned and reasonable political dissatisfaction. The problem is to get all such men in touch with a judicious adviser, and it seems a problem that is by no means easy of solution. The Inns, indeed, might easily solve it if they cared to give their minds to it.

Though one is always glad to witness the energetic promotion of education in all lines and in all countries, one cannot but regard it as somewhat curious that, when educational funds are so urgently needed at home, and not least (if we may judge from recent appeals) at Oxford and Cambridge, a committee of Englishmen, and prominently of Oxford and Cambridge men, should call lustily to the intelligent British public for a cool couple of hundred thousand pounds sterling to found a University in China. The surprise is not materially diminished when we learn that, much as denominational feeling operates in this country when education is on the *tapis*, yet "three considerable Christian colleges—English and American, of different denominations—have all expressed a keen desire to federate round a central professoriate founded on the lines" suggested by the Committee. However, the idea is to establish a University in the Wuhan towns—"the ideal site for an institution which is to exercise the widest possible influence on the New China of the future." Our readers will not suspect any malicious reflexion on their geographical knowledge if we explain that "the most central and commanding site in China is that of Hankow, Hanyang, and Wuchang—known collectively as the Wuhan towns, situated on the Yang-tse-Kiang, at the point of intersection of the great waterway and railway systems of China." Western education, it seems, is being eagerly absorbed by the youth of China, but it brings with it great dangers: "it destroys the old religious and moral sanctions, and puts nothing in their place"—a sufficiently severe reflexion upon Western education. So "the students must reside in colleges or hostels under some kind of moral discipline and supervision"; the various Christian bodies controlling the hostels would severally "provide religious instruction within their walls on the lines of their own denomination"; the professors, though not subject to religious tests, must be in complete sympathy with Christian ideals; and yet, somehow, "the students would not necessarily be Christian, nor would they be unduly influenced to become such." It is not clear what they are to become. There is quite enough indiscrimination and money in the country to float this well meant scheme, in the belief that it will "bring the highest traditions of Western education into the heart of China, and so promote that fusion of the best in Eastern and Western thought," &c., "which is of such vital importance for the whole human race." If "a central University is a supreme need of China," the Chinese may be safely trusted to establish it for themselves in their own way.

President Faunce, of Brown University, is a bold man. He has been telling a Convention in New York State that American Universities are manufacturing an alarming proportion of graduates that are illiterate. He is reported (by the New York correspondent of the *Daily Telegraph*) to have said this:

I would like to see the colleges of the country join in an effort to induce the American people to write and speak the English tongue decently. The colleges are not doing it now. It is a fact that the colleges of this

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country are sending out illiterates. Many of our college seniors cannot write a decent business letter, and large numbers of them cannot express themselves in writing so as to be understood. We Americans should link our minds and hearts and hands in an effort to preserve this mother tongue, which is our definite intellectual heritage. We should prize the English speech and English literature, and pass on this heritage of the past to the children of the future.

Other educationists are said to explain that "it is the American voice that needs the greatest training." They quote Mr. W. D. Howells: "The blemish of American womanhood is their speech; they too frequently twang and whine and whiffle and whinny, and manage their voices carelessly and lazily." But all such commentary only emphasizes the allegations of President Faunce. What is to be done, then? To import plenty of English teachers from this side of the Atlantic, and to develop the custom of sending American children to be educated in English primary schools, says the correspondent, "are the remedies suggested by some reformers." Reformers, indeed! Mrs. Partington with her mop in face of the incoming Atlantic. The thing simply can't be done. Willy nilly, the language will develop naturally in its different environment. The only sensible remark reported is attributed to Miss Hetty Green, Wall Street's lady financier: "The speech that's good enough for me is good enough, I guess, for my son." That, we guess, is so—and will be so—in spite of University Presidents and all other sapient "reformers." But, whatever forms American English may develop, college seniors should certainly be able to write "so as to be understood."

Mr. Asquith's reception *ad portas* at Winchester College acquired a certain distinction from the fact that the last eminent visitor so received was Mr. Gladstone, a quarter of a century before. The happy manner of the Prime Minister's reply to the welcome extended to him by the Prefect of the Hall has been generally recognized; but the humour of his overpowering claim to the *ius trium liberorum* has not always been appreciated. At Rome the *ius trium liberorum* was not "the privilege of a father of three," or of a father at all. It was the privilege of a *mother* of three—a statutory privilege under the Empire down to the time of Justinian, first exempting such a woman from certain disabilities to take under a will, then extended to enable her, in preference to certain other relatives, to succeed such of her own issue as died intestate, and afterwards variously restricted. But the familiar expression was a tempting basis for a humorous turn.

SUMMARY OF THE MONTH.

In the House of Commons, on August 10, Mr. Bridgeman asked the President of the Board of Education if any scheme for the formation of a Teachers' Register is being considered by the Board of Education; and, if not, whether the Board will themselves formulate a scheme.

Mr. Runciman: Schemes for the composition and formation of a Teachers' Registration Council have been submitted to the Board by representatives of certain Associations of Teachers and have for some time been under consideration. It has transpired, on the publication of those proposals, that a considerable number of persons and bodies in the teaching profession regard them as quite inadequate for the constitution of a Council representative of the teaching profession. I understand that a comprehensive conference of various branches of the teaching profession is to be convened in the early autumn to consider alternative proposals, and I think the Board of Education would be well advised to await the result of their deliberations and to consider any recommendations which they have to make.

Mr. Tyson Wilson asked the President of the Board of Education, on August 11, if he was aware that, by the present system of selecting candidates for admission into residential training colleges, a number of student teachers who had proved themselves excellent teachers and who had passed the examinations which qualified them as candidates for admission into those colleges, were unable to gain admission; that many of them were unable to get a situation as teacher, and that many of them, owing to their parents not being in a position to give them tuition until there was a vacancy in a training college, had to give up all hope of becoming teachers, and had to accept employment of a nature for which they were not so well qualified; and whether, under those circumstances, he would take steps to secure that when a student teacher had proved an efficient teacher it shall be a recommendation for admission into a training college.

Mr. Runciman: A large number of new training colleges have been provided during the past few years, and others are in course of erection. I am aware, however, that notwithstanding this increase the available accommodation is not sufficient to provide for all qualified candidates who apply for admission. Inquiries which the Board have instituted tend to show that no widespread difficulties peculiar to student teachers have yet arisen, and special arrangements have been made, I think successfully, to meet as far as possible such difficulties as have been brought to their notice. I do not think it would be advisable to require training college authorities to give a preference to student teachers over other candidates in filling their vacancies, as the honourable member appears to suggest in the last paragraph of his question.

Elsewhere we refer to the deputation from the Secondary Schools Association to the Chancellor of the Exchequer. The Universities also claim total exemption from the land taxes of the Finance Bill, their deputation on June 16 basing the claim on the ground of performance of a national service. The amendments to Clause 25, while removing ambiguities, still leave liability. Under the present proposals the Universities will, under Clause 6, receive a partial exemption from the increment tax, as corporate bodies, and will be liable to this duty only when they sell or lease their property. If the Universities were to lease cricket ground to a college, such ground would be liable to duty. The exemption in the case of the undeveloped land tax is also partial. Land retained by the Universities which is described as used and occupied will be free from the tax as long as it is used and occupied for educational purposes, but no longer. In the case of Universities and colleges and their precincts, such land would include libraries, museums, laboratories, botanic gardens, college gardens, and athletic grounds. On the other hand, any undeveloped land held by such bodies in the neighbourhood of towns or elsewhere, which is ripening for building, would be subject to the tax; it is not always possible for a University or a college to keep such land in their own hands; it is argued that it is illogical to tax University or college property where it is situated at a distance and cannot be occupied by the University or college; and it is pointed out that taxation will mean a heavy drain upon University and college resources.

At the annual prize distribution at University College School, Hampstead, Dr. Spenser, the Head Master, reported that there were 375 boys in the school, and that, whilst all proper provision was made to enable the scholars, without premature specialization, to gain scholarships at the older Universities, the school had steadily set itself to bear its part in the development of the great University of London, and to help to make it worthy of the great city in which they lived. The Lord Mayor, having distributed the prizes, said that for seventy-seven years the school had done good and useful work in Gower Street, and it had been matter for regret to the city that they had had to make a move to the suburbs, as St. Paul's School and Christ's Hospital had done. When the King, accompanied by the Queen, some two years ago had opened their new buildings, his Majesty had proclaimed by his action his good opinion of the work performed by the school, and had given them an impetus for future effort. He was pleased to notice that in the curri-

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culum the modern side of education took such prominence. And it was, perhaps, a matter of regret that other schools did not follow the example. For his part, he considered a boy should not devote too much of his early days to the study of languages, which came in a very small degree into requisition in his future life. An appeal had been made to the Corporation for financial help towards the great expense incurred by the removal of the school to Hampstead; he could not help thinking that the City of London, which had always shown such interest in education, would not fail them in their appeal.

The Board of Education has formulated a scheme for the government of St. Olave's and St. Saviour's Grammar School, Southwark. The new scheme provides for total exemptions from tuition fees to an extent of not less than 5 per cent. of the boys admitted to the school, for clever boys who have previously attended public elementary schools, preference to be given to the sons of people residing in the district.

At the twenty-first annual meeting of the Society of Art Masters, held in the lecture theatre of the Victoria and Albert Museum, Mr. J. Fisher, who presided, said that at no period in the Society's history had there been a greater desire or a greater effort made to forward the interests of art education and of art masters than at present. The non-representative character of the new Teachers' Registration Conference claimed attention last year, and the Council had succeeded in their efforts to obtain a seat on the Conference for a qualified representative of art teaching. The constitution of the Consultative Committee of the Board of Education was unsatisfactory, as art masters had no direct representation. The serious example set by the Board had had its effect on Local Education Authorities, and the teaching of art was almost entirely unrepresented. The result in the majority of cases was the starvation of art education. The necessity for the establishment of a Ministry of Art was beyond question. The interests of art required Government responsibility, encouragement, and organization. Mr. Fisher drew attention to the necessity which existed for a diploma for those holding the art master's qualification, and commended to members the desirability of endeavouring to obtain the consent of the various Universities to establish a Faculty of Pure and Applied Art.

The new Technical College provided by the generosity of the Leathersellers' Company in Tower Bridge Road will be opened on October 1 by the Lord Mayor. It has been erected on land on which once stood the tannery where the famous "Bacon's butts" were manufactured. The freehold cost nearly £10,000, and the building and equipment of the college will require a similar sum, so that altogether the new Technical College represents a gift of £20,000 from the Leathersellers' Company in the cause of technical education. For fifteen years a technical school of leather manufacture has been carried on at Herold's Institute, Bermondsey, where two hundred day students from thirteen countries of the world and a thousand evening students have passed through a technical course. But the Institute was handicapped by its position, by its want of space, and by its antiquity of construction. In the new Technical College every requirement of training will be met. The college is equipped with all the plant and machinery necessary for instruction in every branch of leather manufacture, and comprises a practical model heavy leather tannery capable of dealing with thirty hides per week. There is also a light leather tan-house large enough to deal with over three hundred skins per week; a dye-house fitted with drums, paddles, trays, and striking-out tables; a machine shop for the finishing of light and heavy leathers; and a small currying shop. The equipment is capable of turning out leather on a small scale, not with the idea of competing with existing tanneries, but in order that the students, for fifty of whom accommodation is provided, shall be able to combine scientific and practical training side by side. The scientific training will include bacteriological and microscopical examination of leather, raw skins, and tanning materials.

At the close of the Oxford Summer Meeting the foreign representatives presented an address to the Delegacy, acknowledging the educational advantages of the gathering and its splendid success. Mr. J. A. R. Marriott, the Secretary to the Delegacy, in reply, said that never in the whole history of the movement had there been anything approaching a meeting of the present magnitude. Upwards of seventeen hundred tickets had been issued. The Delegacy wished to have the opinion of the students on two points: (1) whether they were in favour of a limitation of numbers; and (2) what subject they favoured for the meeting of 1911. One suggestion before the Delegacy was that the subject should be "The Expansion of the British Race throughout the World." The summer meeting of next year would be held under the auspices of the Cambridge Syndicate at York, from the middle of July to the middle of August, while the regular summer school would be at York. The Delegacy were proposing to organize a strict vacation course, not at all on the scale of the summer meeting and very little resembling it.

The development of the secondary-school system of India is discussed by the Director-General of Education in India in his Report. There are (he says) three leading conditions which, in the main, determine the grade, the content, and the quality of secondary education in India. These are (1) that boys leave school on attaining the age of sixteen or on attaining a standard of instruction which ordinary boys can reach by that age; (2) that English is the medium of instruction in the two or three top classes; (3) that the total expenditure of secondary schools averages Rs.25·5 annually for each scholar. No substantial change has taken place in the first of these conditions during the period under review. There was, at the beginning of the quinquennium, no minimum age limit for entrance to the Universities except at one, where the limit was sixteen; but the standard of examination for entrance to the Universities and the courses of study in the schools were arranged upon the basis of enabling boys of not more than average ability to pass from school to college at the age of sixteen. Three Universities have now fixed sixteen as the minimum age limit for entrance and two have fixed fifteen. The use of English as the medium of instruction in the upper classes of secondary schools is mainly the result, perhaps a necessary result, of its use as the medium of examination for entrance to the University, and it is also a means of avoiding the expense of duplicating the staff of teachers in places where more than one vernacular is spoken. This involves as a consequence that secondary schools must undertake the heavy task of putting the younger boys in command of so much English, by the age of about thirteen or fourteen, as to enable them to receive nearly all their instruction in that language—a linguistic accomplishment which can only be attained by great inroads upon the total school time available. The secondary schools have long suffered from a period of financial depression, and, although their claims upon the public purse have met with more liberal recognition in the last few years, yet, when the increase of pupils is taken into account, the State is now doing proportionately less for secondary education than twenty years ago. There has been, since the year 1887, an increase in the number of pupils at secondary schools for boys from 272,000 to 473,000, being an increase of 201,000 pupils in twenty years. During the quinquennium the public funds devoted to secondary education have gradually increased from Rs.21,69,000 to Rs.31,30,000. The expenditure of public funds upon secondary education, which twenty years ago stood at the rate of Rs.7·5 a head per annum now stands at the rate of Rs.6·6 a head. Put into English money, the sum which is spent from public funds, both provincial and local, upon 473,000 scholars in secondary schools is £208,668.

Official statistics of the attendance at German Universities during the summer term of this year (says the Berlin correspondent of the *Times*) show that, out of 51,700 students, 3,921 are foreign subjects. The number has increased more or less steadily since 1880. There was a temporary decline two years ago in consequence of the stringent measures which were applied to Russian immigrants into Prussia, but considerably more than one-third of the foreign students are now Russian. The number of American students also shows a marked increase, largely due to the recent admission of women to Prussian Universities. A large number of students now come from the East, and especially from Japan. The number of English students is 155. The increase in the number of students of medicine, which is now 1,181, has been far more rapid than the increase in any other Faculty. It is noteworthy that both Berlin and Leipzig now attract many more students than Heidelberg, which was for many years the most popular of German Universities for foreign students.

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We record with much regret the death of Mr. A. H. Beesly, M.A., a younger brother of Prof. Beesly, at the age of seventy. He was a scholar of Wadham, and was *proxime accessit* for the University Prize that Mr. Bryce won with his famous essay on "The Holy Roman Empire." The whole of his teaching life was spent at Marlborough under Dr. Bradley and Mr. Bell, and he devoted himself unreservedly to the work of the school, taking immense interest in the games of the boys and in the school magazine. He published a "Life of Sir John Franklin," a translation of the first two books of the "Annals" of Tacitus, a short history of Rome in the time of the Gracchi, Marius, and Sulla, and a metrical version of the "Hecuba" of Euripides under the title of "The Trojan Queen's Revenge." On relinquishing the work of teaching, he established himself in a house which he had built at Marlborough, and devoted himself, so far as his health allowed, to literary work, while retaining all his interest in the affairs of the school. His publications included two volumes of verse (which were generally recognized as showing a striking gift for the composition of spirited ballads), and an elaborate "Life of Danton."

The untimely death of Mr. Herbert Francis William Tatham by a fall in the Alps has caused widespread sorrow at Eton and among Old Etonians. To his pupils he was a patient, humorous, and kindly teacher and friend; he was to a larger circle an unrivalled performer as "wall" in the wall game of football. He was joint author, with Mr. Arthur Benson, of the well known book of short biographies, "Men of Might," and he took his share in editing some of the Eton school classics; but those familiar with his rare wit and rich humour were hoping that he might one day find leisure for some wider and more enduring literary work. He was educated at Eton and at Cambridge, where he took a First Class in both parts of the Classical Tripos. He was only forty-seven.

UNIVERSITIES AND COLLEGES.

London. A report by Prof. Karl Pearson was presented to the Senate, showing the progress of the work of the Francis Galton Laboratory for National Eugenics during the past sixteen months. Much labour has been bestowed on the study of pedigrees and the collection and collation of information on various aspects of heredity and environment; and numerous lectures have been delivered and papers published not only by members of the Laboratory staff, but by other contributors to its work. The Senate voted their cordial thanks to Sir Francis Galton for a further donation of £500 for the maintenance of the Laboratory, and recorded their high appreciation of the services rendered by Prof. Pearson, under whose supervision the work is carried on. Mr. David Heron and Miss E. M. Elderton were reappointed respectively Galton Research Fellow and Galton Research Scholar for a year from next February.

A series of White Papers has been issued dealing with the transfer of the Faculties (other than that of Theology) of King's College to the University of London, under the provisions of the King's College, London (Transfer), Act, 1908. It is provided that the new official name of King's College shall be "University of London, King's College," and that the University shall, as far as its means and other duties permit, maintain and develop the departments of the College for teaching and research in wide academic culture, including preliminary and intermediate, but not advanced, medicine. No teaching, however, in subjects pertaining exclusively to the faculty of Theology shall be given. A professorial advisory board will be formed, and the Senate may appoint Fellows. The Rev. A. C. Headlam, D.D., Principal of the College, becomes first Dean. Statutes have been made relating to the Theological Department of the College. A series of statutes has also been issued dealing with the transfer to the University of the department of King's College carried on in Kensington for the higher education of women, and its new official name is "University of London College for Women." Arrangements are made for the instruction of women in Theology and Religion. Miss Hilda D. Oakley, M.A., the present Vice-Principal of the Women's Department of King's College, becomes the first Warden of the College. King's College School, Wimbledon, being also affected by the Act, statutes are issued for its constitution and management.

London and the Workers. In connexion with the movement for the higher education of workpeople a Joint Committee has been formed, under the authority of the Senate of London University—with seven members representing the University and seven representing labour organizations. All the appointments to this Committee have not yet been made, but Mr. C. W. Bowerman, M.P. (London Society of Compositors), Mr. Jenkins Jones (General Secretary of the Amalgamated Society of Engineers), Mr. J. J. Dent (President of the Working Men's Club and Institute Union), and Miss Madams (Co-operative Society) are among those who will represent labour. The scheme is to extend to London the system of tutorial classes which has worked so well with the co-operation of Oxford University in other parts of the country. A conference of intending students and delegates is to be held as early as possible in September, and it is hoped to start this winter with three tutorial classes, to be held in Central, North-East, and South-West London.

"No class," according to a report signed by Mr. D. J. Shackleton, M.P., Prof. D. H. MacGregor, and Mr. A. Mansbridge, "should consist of more than thirty students, of whom at least twenty-six should be workpeople in the strictest sense; the remaining four might well be school teachers. The classes last for three years, and comprise twenty-four two-hour lessons each winter, with twelve fortnightly essays. Each student pledges himself to attend, unless illness, employment, or (if he be an official) meetings of his trade union intervene. There is no age limit, but no one under eighteen would be admitted. The subjects asked for have so far been mainly industrial history and economics, but literature has also had a place. Out of these classes many fine scholars will arise. If these are approved of by the class members as men who will be true to their fellows, and will serve the common good, forgetting individual advancement, they should be enabled to proceed from the class to a period of study at the University itself. These scholars will not attempt to prepare themselves for the professions; their object will be to gain knowledge for the illumination of the dark places in industrial and social life."

An important principle laid down by the Joint Committees is that the teachers should actually teach in the Universities. This, it is held, completes the scheme, because it ensures that the lessons that the teachers learn shall not be lost, but shall pass into the ordinary teaching of the Universities. The fees are quite nominal.

Bristol. The Committee formed for the purpose of providing a Hall of Residence for the women students of the University of Bristol announce that, mainly owing to the generosity of two ladies unconnected with Bristol (one of whom, besides making a large contribution, has guaranteed a sum of £2,000), they have been enabled, with the aid of a grant from the University, to purchase Clifton Hill House for their purpose. The necessary alterations are now being made, so that students may be received at the beginning of next term in October. A further appeal for contributions will be made in the autumn to enable the Committee to complete the equipment of the Hall, to repay the guarantee, and to fulfil their promise to the University to maintain the Hall for a period of two years from next October. The treasurer of the fund is Mr. Hugo Mallet, of Goldney House, Clifton.

Scottish Universities and the Carnegie Trust. In connexion with the Carnegie Trust for the Universities of Scotland an important proposal is at present under consideration for the establishment of residential hostels. Under the terms of the trust half of the revenue, or roughly £50,000, is devoted to the payment of fees. The amount actually required for this purpose varies. Some years ago the demands made were so heavy that they threatened to exceed the available revenue, and the Trustees, in order to safeguard themselves and reduce the pressure on the fund, imposed more stringent conditions upon the applicants. In the year ending September 30, 1908, the payments of fees amounted to £44,199. It has now been suggested that this method of assisting deserving students should be modified, if not abandoned, and a system of residential hostels be established in its stead. University residences for students have been started in several of the Scottish centres by private or semi-public endeavour, and they are considered to serve a very useful purpose; for the lack of any common social life is one of the defects of the

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Universities here, and it is felt that it would be well if there could be some approach to the residential system which is the feature of Oxford and Cambridge. This view has been emphasized by the entrance of large numbers of women students, and in some cases lady wardens have been appointed to exercise an oversight over these girls—for in many instances they are little more than schoolgirls—and see that they were living in suitable rooms and advise and assist them in friendly manner.

The proposal now under consideration is that the Carnegie Trustees should undertake the provision of residences and that part of the money at present devoted to the payment of fees should go to this purpose. Accommodation in these hostels would take the place of the assistance now given by the payment of fees, and, by thus introducing the residential system on a large scale, the Carnegie Trust would be able to effect a far-reaching and desirable improvement in Scottish University life. A number of the trustees are understood to view the proposal with favour, but several take strong exception to this change in the operation of the trust. The latter hold that, however desirable hostels may be in themselves, it is not for the trustees to divert their funds to this purpose. They also lay stress on the fact that many students prefer to live in private rooms and that independence in this respect has almost become a tradition in the Scottish Universities; and they hold that the trustees, in the administration of their money, must take account of this and not select a scheme which, however desirable on various grounds, would run counter to the conditions of the time and possibly prejudice the rights of the student who preferred to live by himself. The proposal is the subject of considerable discussion at present, and the outcome will be awaited with interest.

Ireland. At a recent meeting of the Senate of the newly established National University, Archbishop Walsh, Chancellor, in the chair, the question of compulsory Irish was brought forward by Dr. Hyde in the form of a resolution, that the Senate should ordain "That a suitable proficiency in the Irish language and in the history of Ireland should be required from all candidates for entrance, and for the non-specialized courses of the University." This was ruled out of order, inasmuch as it called on the Senate to make a regulation relating to examinations, which the Senate was expressly prohibited from making without report from the General Board of Studies, and the General Board of Studies could not exist until after the dissolution of the Royal University. In reply to a request from the Irish County Councils' General Council that the Senate should receive a deputation urging that the Irish language should be made an essential subject in the programme of the University, the Registrar was directed to state that, under the provisions of the Charter, no matter connected with the curriculum or subjects of examination of the National University could be effectively considered until the General Board of Studies shall have been constituted, which Board could not be constituted until after the dissolution of the Royal University—that is to say, until some date probably not earlier than the end of October—and to add that the Senate would be prepared to receive the deputation at the first meeting held after the dissolution of the Royal University.

Saskatoon. Saskatchewan is starting its University in the city of Saskatoon. The intention of the governors is to begin with the erection of the Agricultural College, as they believe their first duty is to provide for the scientific education of the farmers' sons. This structure will embrace a dormitory building suitable for 150 students, together with farm and machinery buildings suitable for a fine agricultural college. The Arts Building will come next. The completed scheme is on a generous scale; but large tracts of land are set apart in the West for educational purposes, and, as it is increasing in value all the time, Saskatchewan educationists believe that by the time their University plans are fully developed they will have all the money they require to carry out the above programme. The land for the University and adjacent buildings affiliated with it measures one mile long by half a mile wide, and the remainder of the thousand acres embraced in the whole area at the governors' disposition will be devoted to the agricultural college and farm, which will be affiliated with the University. The different religious denominations, including the Roman Catholic, will have representatives on the Board of Governors, and denominational colleges to be erected by the Anglicans, the Methodists, the Presbyterians, and the Roman Catholics will be grouped around the central University and affiliated with that institution. The Church of England is already making preparations to erect its theological hall within the shadow of the provincial University. Dr. Walter Murray, of the University of Dalhousie, Halifax, is to be the first President of the University.

THE EDUCATIONAL LADDER.

Aldenham.—Leaving Exhibitions: H. M. Sale (Exhibitioner of Christ's College, Cambridge), A. Roscoe (Scholar of King's College, Cambridge), J. S. Boulter (Scholar of Keble College, Oxford), A. C. Blyth (Exhibitioner of Christ's College, Cambridge, and Tancred student), and J. N. Barstow (Sizar of Magdalene College, Cambridge). Senior Platt Studentships: C. R. Jackson, B. M. Bauer, T. Frederick, E. W. Reading, T. N. Rich, and B. W. Wilson. The value of the scholarships held by G. C. F. Mead, W. L. McNair, and K. W. M. Pickthorn was increased.

London: City of London School.—Classical Senior Open Scholarships: H. C. Oakley and S. Ratainsky; Junior, A. P. Davis and D. H. Avis; the Modern Senior Open, W. H. Easty; the Junior, E. E. Caws; the Science Junior Open, T. W. Kiddle; the Abbott, F. P. Cheetham (winner also of an exhibition of £30 a year at St. John's College, Cambridge, a Finnis Memorial Prize, and a Beaufoy Shakespeare Prize); the Alston Science, S. I. Levy (winner also of a £60 Scholarship at St. John's, Cambridge, the Senior John Carpenter History Prize, a Stewart Memorial Prize, the Beaufoy Medal for Shakespeare Study, and a medal for gymnastics); the Fourth Beaufoy, R. W. James (winner also of a Scholarship of £80 a year at St. John's, Cambridge, the Beaufoy Mathematical Prize, a Stewart Memorial Prize, and Alderman Hale's Medal for Chemical Science); the Carpenter, M. Posener; the City of London Asquith, R. A. Fraser (winner also of a Scholarship of £80 a year for Mathematics at Pembroke College, Cambridge, Dr. Conqueror's Gold Medal, and a Beaufoy Prize for Shakespeare Study); the Lambert Jones, R. A. Attfield (winner also of an exhibition of £20 at Selwyn College, Cambridge, a Finnis Memorial Prize, and a Beaufoy Shakespeare Prize); the Masterman, C. Robbins (winner also of a John Carpenter History Prize and a James Innes Prize for Political Economy); the Mortimer Exhibition, W. E. Dumbrill; Sir D. Salomon's Scholarship, C. N. Spero; St. Thomas's Medical, G. A. Bird; Sir William Tite's, L. Spero; the Fishmongers', T. J. Dannhorn (winner also of a Scholarship of £40 a year for Classics at Caius College, Cambridge, Sir James Shaw's Classical Prize, the Mowlem Prize for English, the Medal for Elocution, Sir Marcus Samuel's English Essay Prize, a Mortimer English Prize, and Dr. Phillips's Latin Verse Prize); Jews' Commemoration, G. Robbins; Lionel van Owen Scholarships, F. N. Reed, A. G. Willett, C. W. Bloomfield, and B. M. Schonberg.

London: St. Paul's.—Classical Exhibitions: H. F. Jolowicz, £70 a year for 4 years; N. E. Hardy, £60 a year for 4 years; E. C. Sturdy, £40 a year for 4 years; P. A. Tharp and H. W. Willis, £30 a year each for 4 years. Mathematical Exhibitions: J. H. Clarke, £70 a year for 4 years, and M. Segal, £50 a year for 4 years. With the first mathematical exhibition also goes the Keen Scholarship of £26 for one year. Science Exhibitions: A. L. Bacharach, £50 a year for 4 years, and M. Sinha, £40 a year for 4 years.

London University.—University Entrance Exhibitions: G. M. Bennett, Clacton College; R. M. Clark, Southend Secondary School; J. T. Davies, Llanelly County School; J. E. Stephenson, the College, Winchester. St. Dunstan's Exhibitions (awarded by the St. Dunstan's Educational Foundation): Eileen O'Rourke (Arts), City of London School for Girls and University College; Kathleen Parker (Science), Mary Datchelor School. Reid Scholarship for Women: no award. City Parochial Scholarship: William Payne, Birkbeck College. Ouseley Memorial Scholarship (£50 each for one year): Hindustani, Claud H. Field; Persian, Sigmar Hillelson; Chinese, G. W. Shipway (King's College). University Scholarships.—Classics: no award. French: Daisy Elizabeth Fenner, Birkbeck College; Olive Wright, East London College. German: Margaret S. Gadney, Royal Holloway College; Louis A. Triebel, University College. English: Edward J. Thompson, Wesleyan College, Richmond; Mary A. Baker, Royal Holloway College; Winifred O. Hughes, University College. A University Scholarship is divided between Miss Baker and Miss Hughes. History: Mabel H. Mills, Bedford College for Women (Derby Scholarship; but disqualified from receiving the emoluments, being a Gilchrist Scholar); Ella M. R. Swain (Derby Scholarship); Dorothy F. Cheetham-Strode. Elementary Psychology and Logic: John C. Flower, New College and London School of Economics; Malcolm M. Thomson, University College. Mathematics: Robert G. Lunnon, University College (Sherbrooke Scholarship); Cecil W. Gilham, East London College. Physics: Lewis Simons, King's College (Neil Arnott Scholarship). Chemistry: John E. Brimley, East London College (Neil Arnott Scholarship);

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Hubert H. H. Howard, East London College. Botany: no award. Geology: Disney A. Wray, South-Western Polytechnic Institute.

Bedford College for Women.—Reid Scholarship in Arts: Z. M. Downes, Clapham High School. Old Pupils' Scholarship: E. E. M. Birch, Notting Hill High School. Pfeiffer Scholarship in Science: W. G. C. Hurst, Streatham High School. In the Training Department; Scholarships of £20, H. B. Harding, B.A. Wales, and D. Soothill (Newnham), Medieval and Modern Languages Tripos, Cambridge, Class II.; Bursary of £10, M. G. Madell, B.A. Lond.

London School of Economics and Political Science.—Shaw Research Fellowship (100 guineas a year for two years): Charles K. Hobson, Trinity College, Cambridge.

Oxford Local Examinations.—Seniors: Exhibitions (£30), for boys, E. Bamford, Wimbledon College; for Girls, K. W. Smith, Culcheth Hall, Bowdon (Misses Lang). Silver Medal of the Royal Geographical Society: A. A. A. Gross, Municipal Secondary School, Barrow. Bronze Medal: M. D. Rigg, Park School, Preston. Cobden Club Prize, G. G. Walsh, Boulevard Municipal Secondary School, Hull. Juniors: Scholarship of £10 (offered by the Delegates), for boys, H. E. Macklin and A. J. Moorat (both of Wimbledon College), equal; for girls, C. A. Williams, George Dixon Secondary School, Birmingham. Royal Geographical Society's Medals: H. M. Marsden, Hutton Grammar School, Preston, and M. Bailey, Wigan Grammar School. Preliminary: O. R. Orchard, Secondary School, Poole, and J. Carroll, St. Francis Xavier's College, Liverpool, tie for top place.

Oxford University. — Aubrey Moore Studentship: Owen G. R. Williamson, Honorary Scholar of Hertford. Liddon Studentships: George H. Fendick, B. A., Exeter, and Stanley T. Collins, B.A., Scholar of Wadham.

Reading: University College.—Open Scholarships: In Arts, John H. Tombling; in Science, Thomas H. Burnham; in Agriculture, Clifford S. Weight; in Music, Douglas W. Clarke (Composition), Elsie S. Metcalf (Singing), Evelyn Sharp (Composition), Rosalie M. Stokes (Pianoforte).

HOW TO DISTRIBUTE PRIZES.

We quote from the lively *Western Journal of Education*, with a chastened sense of our national and individual ponderosity. Unfortunately, the example presented by our contemporary is rather late for this season; but prospective distributors of prizes may pigeonhole it against future opportunities of public distinction. The Ione High School in Amador County is the scene; the presentation of diplomas to thirteen "graduates" at its "closing exercises" for the session is the occasion; Mr. E. W. Perkins, the Clerk of Board, is the performer. Our contemporary describes:—

This function of handing over graduating diplomas I have witnessed many a time and oft for, lo, these many multiplied years—but never did I dream that it could be done with the liveliness and cheer that Mr. Perkins gave. It had always been solemn to the verge of the funereal—stiff, formal, ceremonious. Not so with Mr. Perkins. The poor graduates are usually scared stiff by the enormous and portentous gravity of the occasion. But not this time.

Mr. Perkins is a druggist by trade—a tall, slender man, with a pale, scholarly face, curly hair, and a deliciously droll and humorous smile. He stepped out in front with an armful of diplomas.

"May, come here," he said, beckoning to the first of the graduates. "I'm going to make it as hard for you as I can"—with a wink that made the audience laugh. He shook hands cordially with May, gave her a diploma and a big bunch of flowers, and then beckoned authoritatively to the next of the dignified seniors—a young man this time.

"Mike," said he, "the jig is up! Here's your sheepskin." And "Mike" received his flowers, his handshake, his diploma, and his cordial smile, amid the plaudits of the multitude.

George came next. "Ladies and gentlemen"—taking him familiarly by the arm and leading him to the front, "this young man is chockful of steam—a balloon full of gas. When he goes off he'll certainly shake a hole in the world somewhere!" And George escaped to his seat while the audience roared.

When "Charley" came forth, the crowd applauded and continued to applaud—he was a little boy and was evidently a general favourite. After vainly attempting to be heard, Mr. Perkins gave it up, and locking arms with the boy, nodded and winked and smiled at him and with him at the audience—shook hands with him, gave him his flowers and the coveted paper—and pushed him back into place, with the people still clapping their hands.

And so it went. Was it not naive and refreshing? A contrast to the funereal embarrassment of similar occasions elsewhere? At the close some one called for "Three cheers for Perkins." Future dignitaries who have this ceremony to perform may take a hint.

They may! For further encouragement, we could have wished to reproduce the portrait of this original distributor, with the familiar and genial legend, "This is Perkins."

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* * *

The following courses for teachers have been arranged at University College, London:—(1) "Greek Art, with Special Relation to the Collections in the British Museum," by Prof. E. A. Gardner, beginning October 16, at 11 a.m.; (2) "Latin Literature," by Mr. L. Solomon, beginning October 11, at 6 p.m.; (3) "The Phonetics of English," by Mr. D. Jones, beginning October 11, at 5.30 p.m.; (4) "French Phonetics," by Mr. D. Jones, beginning October 7, at 6.30 p.m.; (5) "The British Empire: its Past, its Present, and its Future," by Prof. A. F. Pollard, beginning October 14, at 6 p.m.; (6) a Seminar Course on "The Materials for English History and Biography," by Prof. A. F. Pollard, beginning October 14, at 8 p.m.; (7) "Mathematical Drawing," by Dr. L. N. G. Filon, beginning October 13, at 6 p.m.; (8) "The Results obtained by Experimental Psychology concerning the Intellectual Processes," by Dr. C. Spearman, beginning October 8, at 6 p.m.; (9) a Training Course in School Hygiene, by Prof. H. R. Kenwood and Dr. H. Meredith Richards, beginning October 6, at 7 p.m.

* * *

The following County Council Lectures for Teachers will be given at Bedford College for Women next term:—"Goethe's Life and Work" (delivered in German), by Prof. J. G. Robertson, Ph.D., M.A., B.Sc., on Saturdays, at 11 a.m., beginning October 9; "The Hygiene of Common Life" (lectures followed by demonstrations), by Mr. J. S. Edkins, M.A., M.B., on Tuesdays and Thursdays, at 6.30 p.m., beginning October 7. In connexion with the Hygiene Course of the College, Mr. Alfred Milnes, M.A., will give a course of lectures on Economics in the Michaelmas Term.

* * *

The Lord Mayor will open the new Leathersellers' Technical College in Tower Bridge Road on October 1.

* * *

The National Federation of Rate-payers will hold a two days' Conference on Educational Reform in London early in October.

Honours.

The University of Oxford conferred the honorary degree of D.C.L. upon the Marquis di San Giuliano, the Italian Ambassador, on the occasion of his delivering the inaugural address at the University Extension summer meeting.

* * *

The long list of honorary degrees conferred on occasion of the celebration of the quincentenary of Leipzig University includes the names of the King of Saxony, the Grand Dukes of Baden and of Hesse, Count Zeppelin, Mr. Roosevelt, Mr. Bryce, and Herr Gerhart Hauptmann (dramatist).

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THE University of Geneva has conferred the honorary degree of D.Litt. upon Mrs. Frederika Macdonald, author of "A New Criticism of J. J. Rousseau."

Endowments and Benefactions.

THE Gilchrist Trustees have granted £50 to the library of the Bedford College for Women, to be expended on the Classical Department; and Prof. Carveth Read, M.A., has given £20 to the Psychological Department of the College.

* * *

A MEDICAL Research Scholarship, £100 for one year, open every third year, has been founded in Manchester University in memory of the late Dr. Ashby. The scholarship will be offered next year.

* * *

THE late Dr. Edmund W. Clarke, M.D. Edin., B.Sc., of Chesterfield, after other bequests, has left the residue of his property to found a Medical Bursary in the University of Edinburgh.

* * *

THE late Mr. Cornelius C. Cuyler, banker, New York, has left £20,000, with the reversion of several million dollars, to Princeton University.

Mr. Cuyler's uncle, the late Mr. M. K. Jessup, of New York, recently left to Princeton University property valued at over a million pounds.

Scholarships and Prizes.

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TWO Exhibitions of £30 a year for three years (with an addition on graduation) are offered by the Clothworkers' Company to non-collegiate students who are preparing for honours and for orders at Cambridge University. Apply to the Censor, Fitzwilliam Hall, by October 1.

Appointments and Vacancies.

MR. WILLIAM HENRY HADOW, M.A., Mus.Bac., Fellow and Tutor of Worcester College, Oxford, has been appointed Principal of Armstrong College, Newcastle-on-Tyne.

* * *

THE REV. HERBERT ARMITAGE JAMES, D.D., Head Master of Rugby School since 1895, has been elected Master of St. John's College, Oxford.

* * *

IN Manchester University Mr. F. W. Clarke, M.A. Cantab., formerly Professor of English Literature, Deccan College, Poona, has been appointed Assistant Lecturer in English Language and Literature; and M. René M. Gardeur, Senior French Master at Abertillery County School, Junior Assistant Lecturer in French; and Mr. Joseph Mangan, M.A., R.U.I., Fellow of the Royal College of Sciences, Ireland, Honorary Research Fellow in Zoology, Lecturer in Economic Zoology.

* * *

IN Liverpool University, Mr. P. H. Kirkaldy has been appointed an Assistant Professor in Chemistry; Mr. J. K. Fotheringham, Lecturer in Ancient History; the Rev. S. C. E. Legg, Lecturer in Aramaic; the Rev. S. Kirschbaum, Lecturer in Greek Testament.

* * *

APPLICATIONS for the Chair of Anatomy in Birmingham University should be lodged with the Secretary, Mr. George H. Morley, by September 21. £800.

* * *

THE University College of Wales, Aberystwyth, requires a Professor of French and an Assistant Lecturer in Latin. Apply (with seventy-five printed copies of testimonials) to the Registrar, Mr. J. H. Davies, M.A., by September 6.

* * *

MR. ARTHUR ROBINSON, M.D., M.R.C.S., Professor of Anatomy in the University of Birmingham, has been appointed to the Chair of Anatomy in the University of Edinburgh, in succession to Dr. Cunningham.

* * *

THE REV. W. W. LONGFORD, M.A. Oxon., Lecturer, St. David's, Lampeter, has been appointed Vice-Principal of Lichfield Theological College.

* * *

MR. A. B. CLARK, M.A. Edin., has been appointed Professor of Political Economy in Manitoba.

* * *

IN the new Technical College, Dundee, Mr. Robert D. Archibald, Principal Assistant in the Department of Electrical Engineering, Glasgow and West of Scotland Technical College, has been appointed Lecturer in Electrical and Mechanical Engineering; and Mr. C. W. Cochrane, B.Sc., Science Master, Arbroath High School, Principal Assistant in General Science.

* * *

MR. WILLIAM CAMPBELL HOUSTON, B.Sc., Assistant Professor of Mechanical Engineering, Heriot-Watt College, Edinburgh, has been appointed Head of the Department of Mechanical and Civil Engineering in the South-Western Polytechnic, London.

* * *

MR. SAMUEL C. LAWS, M.A. Cantab., B.Sc. Lond., Blackburn Technical College, has been appointed Principal and Science Master of Loughborough Technical School.

* * *

MR. A. J. ENSOR, B.Sc., has been appointed Principal of Wellingborough Technical School.

* * *

AT Bedford College for Women (University of London) Miss F. C. Johnson, M.A. Lond., has been appointed Lecturer in French and Head of the Department of French; Miss E. Strudwick, M.A. Lond., Lecturer in Latin and Head of the Department of Latin; Miss D. Tarrant, M.A. Lond., Classical Tripos, Cambridge, Assistant Lecturer in Classics; Miss F. R. Shields, M.A. Lond., Assistant in Philosophy; Miss E. M. Spearing, Medieval and Modern Languages Tripos, Cambridge, Assistant in English; Miss A. N. Halket, B.Sc., Demonstrator in Botany.

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MR. GILBERT SLATER, M.A. Cantab., D.Sc. Lond., has been appointed Principal of Ruskin College, Oxford, and Resident Lecturer in Sociology, in succession to Mr. Dennis Hird. Dr. Slater is an ex-Mayor of Woolwich.

* * *

MR. C. BIRCHENOUGH, M.A., Assistant Lecturer in Education at University College, Cardiff, has been appointed Lecturer in Education and Master of Method at Sheffield University.

* * *

THE REV. W. D. STANDFAST, B.A. Oxon., Curate of St. George's, Wolverton, has been appointed Head Master of Bishop's College School, Lennoxville, Quebec.

* * *

MR. LLOYD STORR-BEST, M.A., Blackpool Municipal Secondary School, has been appointed Head Master of the County Grammar School of King Edward VII., Coalville.

* * *

MISS M. BROWN, M.A. Dubl. (Medieval and Modern Languages Tripos, Cambridge), has been appointed Resident Tutor at Cherwell Hall, Oxford, in place of Miss Cicely Carter, resigned.

* * *

AT Milham Ford Girls' School, Oxford, Miss A. Fleming, M.A. St. Andr. (Hon. Mods. Lit. Hum., Oxon.), St. Felix School, Southwold, has been appointed Vice-Head Mistress, in place of Miss E. Kirk, B.A., who has become Head Mistress of Sleaford High School; and Miss Wilmet Herbage, M.A. St. Andr., Modern Language Mistress, in place of Miss Blanche Palmer, who has become Head Mistress of Aucklands, a preparatory School in connexion with Manchester High School.

* * *

MR. GILBERT WATSON, M.A. Edin., B.A. Oxon, Royal High School, Edinburgh, has been appointed Rector of the Royal Academy, Inverness.

* * *

MR. JOHN HARVEY, M.A., Principal Classical Master, Dollar Institution, has been appointed Rector of Dumbarton Burgh Academy.

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MESSRS. WILLIAMS & NORGATE are publishing "The Chemistry and Literature of Baryllium," by Prof. C. L. Parsons, B.Sc., New Hamphire College; and a comprehensive work on "Elementary Chemistry"—descriptive, mathematical, and experimental—by Frederic B. Emery, M.A.

General.

THE University of St. Andrews is beginning to make preparations for the celebration of its five-hundredth anniversary. It was founded by charter from Bishop Wardlaw on February 27, 1411–12, confirmed by Pope Benedict in 1413; but lectures had already been in progress in 1410.

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THE National Assembly of Iceland is reported to have decided to establish at Reykjavik a University with four faculties and sixteen professors and lecturers.

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PROF. ARTHUR J. EVANS, the distinguished archæologist, has accepted an invitation to stand for Oxford University in opposition to Lord Hugh Cecil.

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A NEW Labour College is to be founded at Oxford on a thoroughly socialistic basis—an outcome of the recent "students' strike" at Ruskin College.

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THE REV. DR. MACDERMOTT, of Belmont, has petitioned the Lord-Lieutenant of Ireland in Council to disallow the statutes of the Queen's University, Belfast, in so far as they permit the teaching of Scholastic Philosophy in the University.

TUDOR EDUCATION.

By Professor FOSTER WATSON, M.A., University of Wales, Aberystwyth.

II.—THE EDUCATION OF BOYS.

IN the preceding article (*The Educational Times*, October, 1907) I presented Vives's views on the education of girls. I gave that first because treatises on the education of girls in Tudor times are rarer than those on the education of boys. However, Vives expresses himself in more detail in dealing with the training of boys. In some ways this treatise is one of the most important of Tudor educational documents, not inferior in interest to that of Erasmus. Prof. W. H. Woodward has given an English rendering of Erasmus's treatise. Now—for the first time, I believe—is presented an English translation of Vives's tractate:—

JOANNES LODOVICUS VIVES
To CHARLES *the son of* WILLIAM MOUNTJOY.

Since I have desired to show to your Father (a most distinguished man, adorned in the highest degree with every kind of virtue) how much he was loved by me, and how he has always treated me with singular benevolence, I determined to write something for you on the beginning of your studies, in which all the virtue and method of erudition should show themselves as does the sap in the seed of future plants and fruits. I took pains not to overwhelm you by the copiousness of precepts, or to deter you by needless difficulties. Everything has been adapted, as far as it was possible to do so beforehand, to the capacity of your age, or that of a slightly older age than yours. In sending you this little book I think of it as going to your Father, the maintenance of whose own character and the promotion of the education of yours are his care, as much as the continuance of his life, so that he may love you, if you so turn out, as he desires, to be a thoroughly honourable and learned man. For this purpose this little book has been put in your hand to follow it out with intellect and industry. Farewell, and imitate the example which you have at home of your extremely wise Father. —London, 1523.

Religion.

Since wisdom, virtue, and knowledge come from God alone, it is fitting that the first entrance to all these should be through God, towards Whom it behoves thee always to comport thyself with the greatest piety, and in His affairs to bear a most religious mind, nor to carry out any work of His in a light, sluggish, or perfunctory manner.

Work.

Since God does not give His gifts to idle people, there is need of labour and diligence in the pursuit of letters and virtue.

Memory.

Know that memory is the treasure of all erudition, and that, if it is lacking, all labour is superfluous, as if you were to pour

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water into a wide-mouthed jar perforated at the bottom. But no one has a memory so unfortunate that he cannot make it tolerable if he develops it by practice. For there is nothing which gives more joy if work and labour is applied to it than memory, whilst nothing is more easily corrupted or perishes that memory if allowed rest and ease. Therefore every day something should be learned by heart, even when it is not necessary,* merely lest a torpor should attack the memory, than which there is no more pernicious a disease. Sound health contributes to a sound memory; therefore be on your guard, in the first place, against repletion, against drunkenness, against immoderate amount of wine, against strong beer (*cereuisia*), and against lying on a couch.

The Tutor.

The teacher is no less to be loved, esteemed, revered than a father. Truly teachers bear a certain image of our fathers to us, for you can receive no greater kindness than that of being made more scholarly (*eruditus*) and better morally—for to these two gifts nothing in life can be compared. Add to this, if you love your teacher, you learn more easily. You will then never despise what he says, nor neglect his behests. Always in your mind accord dignity to the teacher, and treat his words as oracles. Do not merely love him, but strive to be loved in return by him, that so he will teach you the more diligently. By obeying his precepts closely and modestly, and by observing, honouring him in all he says or does, or esteems in life or speech, so act that he will feel that you also approve it. If he disapproves anything, then do you also shun it. Listen to him intently—to his words, his forms of speech, note down his opinions, and make yourself as far as possible, like him; take him for example, because when the teacher shall see this he will take pains that you shall not possibly receive from him any thing which would be unworthy of imitation.

Fellow-pupils.

Fellow-disciples are, as it were, brothers (*fratrum loco*). For you are born from the same master, as if from the same father. You are bound by the sanctity of literature not less than that of blood. Therefore you should wish their welfare no less than that of brothers. If one is more learned than thyself, do not hate him for this reason, but applaud his ability and strive to be equal to him in learning and virtue, even to surpass him, so that a like approval may be thine.

Emulation.

Do not strive enviously, or with malevolence, against those better or wiser than thyself, but with virtue, honour, zeal. Do not look down on those inferior to thyself; rather help and raise them that they may grow strong to climb up. For thou thyself art neither worse nor less skilful if thou hast others equal to thee: but then are so much the better thyself if others have risen upwards by thy assistance. But, if all are ignorant, there will be no one even to understand, and much less admire, what is good in thee. It is certainly splendid to contend with the good; it is very splendid to improve on them, if it be done in a right way and by means of virtue, and without any sort of deceit.

Making Notes.

Make a book of blank leaves of a proper size. Divide it into certain topics, so to say into nests (*nidos*). In one, jot down the names of those subjects of daily converse, *e.g.*, the mind, body, our occupations, games, clothes, divisions of time, dwellings, foods; in another, rare words, exquisitely fit words; in another, idioms, and *formulae dicendi*, which either few understand or which require often to be used; in another, *sententiae;* in another, joyous expressions; in another, witty sayings; in another, proverbs; in another, difficult passages in authors; in another, other matters which seem worthy of note to thy teacher or thyself. So that thou shalt have all these noted down and digested. Then will thy book alone know what must be read by thee, read, committed, and fixed to the memory, so that thou mayst bear in thy breast the names thus written down, which are in thy book and refer to them as often as is necessary. For it is little good to possess learned books if your mind is unfurnished for studying them.

Industry in Writing.

Take care that thou hast a practised hand in writing. Never go to the lessons of thy teacher unprovided with pen and paper, so that thou let not fly by thee any elegant, rare, or necessary word, or a useful *formula loquendi*, or a significant, weighty, or wise saying. Then do thou at once, having heard it, enter it into thy treasures. So wilt thou prepare for thyself the greatest riches of erudition, and these within a short space of time.

Reading.

Do not read any book without selecting passages in the same way as I have said in speaking of the tutor's conversation. Never read any thing with a loitering mind, or a mind intent on other things; let it be intently fixed on the reading, in which these points are to be considered; words, *formulae loquendi*, and ideas. Consider carefully what words are applied by the writer to explain the subjects on which the author treats, what idioms, what forms of speech. Then the matter itself must be observed, what the author means by the language he uses. One by one you must consider what you can single out, what retain, what turn to use (*in usum tuum vertas*).* Always have pen and paper that you may write out notes of what you admire and what delights you. So, too, those points which cause you delay, mark them out, so that you can get them resolved by your teacher or fellow-pupil.

Questioning.

Do not be ashamed to ask questions concerning what you do not know. For this is not disgraceful. It is ignorance which is disgraceful. Do not wish to persuade others that you know what you do not know. You will then deceive yourself, not the others, and when you are thus caught in your ignorance, it will raise a laugh against you.

Correction.

Take care not to forget what you see blamed or corrected, not only in yourself, but also in others. Never let it be necessary to be blamed twice for the same sort of fault. Make use of the mistakes you see in others to your own improvement. For a wise man often amends his own life by the errors that he sees in the lives of others.

Conversation (sermo).

Speak yourself as you hear the instructed speak, or as you read in Latin writers. Shun the words which you consider of doubtful value both in speech and in writing, unless first you have got to know from your teacher that they are Latin. With those who speak Latin imperfectly, whose conversation may corrupt your own, rather speak English or any other language in which there is not the same danger. Converse gladly with those who are wise and fluent. No pleasure is greater than to hear those who, in their speech, have instantaneous balm (*praesentanea medicamenta*) for all the ailments of the mind.

Style.

Repeated practice is the best master for the attainment of good style, and the fashioner of speech. In the beginning use not only words taken from Latin authors, but also short sentences collected from them. They should be so aptly put together that for the most part they are another's. But little by little you will mix your own composition until the time when your stage of erudition has developed, your writing can become all your own. First write few words at a time, but with accuracy, so that you may observe not how much, but how well it, is done. For, as the practice increases, you will retain the carefulness. Speed and facility will be produced by exercise so that you will come to write at the same time with ease and excellence.

Authors (for conversation).

In the meantime, whilst thou canst not at thy age judge concerning the value of authors, I give you my opinion on those authors who are to be esteemed especially from the point of view of increasing the richness of vocabulary, and for increasing knowledge of subject-matter. For daily conversation Terence is of great importance. Cicero made considerable use of him. Indeed, on account of the charm and gaiety of speech in his plays many thought they were written by nobles of the highest families. Also the letters of Cicero, especially those to Atticus, teach much and may render ready practice for purposes of conversation. For in them the conversation is pure and simple, such as Cicero himself used with his wife, his children, his servants, his friends, at dinner, in the bath, on his couch, in the garden. There are, too, the familiar "Colloquies" written by Erasmus, which are as pleasant as they are useful. These are of no small importance, since Erasmus is a man of cultivated and refined intellect. The letters of the younger Pliny may supply many ideas (*sententias*) of any kind of letter, which the writer of letters may need. They seem as if they had been composed almost so as to describe a few events, very much like Cicero. On the other hand, they differ from his treatment in the times con-

* *Cf.* Prof. Wm. James.

* *Cf.* Prof. Laurie.

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cerned. The opinions expressed are often charming and afford material for enriching the expression in letter-writing. The letters of Politian have much the same characteristics except that sometimes they have been composed with too great carefulness, whereby they are somewhat more laboured. Their writer has taken pains that nothing should be included which is not polished in the highest degree. On this account he will not let pass by any good word which he can appropriate. An anxiety of this kind is not very conducive to composition, suitable for epistles. There are, too, the letters of Philadelphus, which have more verbosity than grace, and the pleasantries of Calentius. If you have time, you may read Apollinaris Sidonius and Apuleius' "Asinus" and "Florida."

Histories.

Histories also can build up a knowledge of language, as those of Livy, in which is a very delightful fluency, and, as Jerome says, a milky fountain of eloquence. There is Suetonius, in whom there is that marvellously close appropriateness of speech which has more nerves than body. Cornelius Tacitus would be a great help if he had come down to us whole and corrected, and, such as he is, he is emphatically of use. In Caesar's "Commentaries" is shown that chastity of style of Roman conversation which was in the pristine Roman nobility; nothing can be imagined more terse, polished, elaborate. These "Commentaries" should be known accurately. They will greatly enrich materials of speech and will make it readier for use. Sallust was the brightest writer of Roman affairs, as Tacitus says. He is often in the hands of boys, although he seems to me to be more suited to those who have made considerable progress in the language. His grace of writing is inimitable, and, however often any one goes back to Sallust, the reader never feels tedium or satiety.

Agricultural Writers.

Cato, Varro, Columella, Palladius, Pliny, and the architect Vitruvius suggest words in various subject-matter, and are, therefore, to be read diligently, and the words used to be referred to the things described, so that we do not translate it wrongly. Pliny is as varied in expression as the nature of the subjects on which he treats. There is, therefore, in him a great wealth of both subject-matter and of expression. Vitruvius will provide by no means a small store of language. If his subject-matter were changed to suit the present time, they would not be so obscure.

Poets.

Poets are also to be studied for the sake of the mind; for they often relieve the tedium of business, and of the reading of unfettered speech. This alternation of verse and prose keeps the mind intent on studies for a longer time. Moreover the poets abound in unusual words and figures of every kind which common speech at one time or other requires. The poets are, in invention, sublime, pleasant, keen, weighty, facile; in words, sweet, charming, gay. They raise up every emotion as the occasion demands. Virgil holds the first place, and rightly so, in my opinion, on account of his seriousness and his ideas. Horace is joined with him as being so polished in his verses, singular in his expression, and, for the most part, perceiving life wisely. Silius Italicus has shown great industry. Of the Latin tragedians Seneca alone has survived to our age. But, in my opinion, Lucan holds the victory over all, in the majesty of his words and the force of his subjects, in the value and number of his thoughts. Also the poets of our religion should be read, Prudentius, Prosper, Paulinus, Servilius, Juvencus, and Arator, who, whilst they discuss matters of the highest kind, for the salvation of the human race, are neither crude nor contemptible in speech. They have many passages in which, by their eloquence and charm of verse, they vie with the ancients. Some even think they surpass them.

Grammarians.

In all the authors you read notice how the grammatical forms are preserved and where they are neglected. For in many of them the use of them is varied and multiform, and cannot be enclosed within the norms and rules. Now that which is constituted by actual use must be followed rather than the grammatical art, and not contrariwise. Yet that art, on this account, is not to be despised. Only do not follow it so closely as to be strangled by it (*ne sit superstitiose anxie*). In our time we need rules, since we have not the Roman people to whom to talk, and all these rules have to be wrested out of the Latin authors. If we do not get help from them for the right way of speaking, we shall be forced on solecisms as being our chief help. For we have different material of thought from the ancients, and must speak therefore in other terms. Even when the same language was spoken in Latium and Greece by the learned and the people they could not do without rules. Many have written grammars; but one or other of the best should be chosen—Perothus or Aldus, Nebrissensis, Mancinellus, Sulpitius, Ninivita. For elegancies of speech Valla should be diligently perused: he is too pedantic, but most apt for rendering students more wary.

Expositors.

You will at your age, and even at a later age, need expositors in reading authors. For there are in writers many difficult places which you can hardly successfully attack, even with the most troublesome labour. Expositors explain everything, with a minimum of time and work, which leads to usefulness and advancement of knowledge. In the number of such expositors are Servius on Virgil, Donatus on Terence, Acron and Porphyrion on Horace, as well as some more recent commentators. Vocabularies are also to be had which I should wish you always to have at hand whilst studying, so as to consult them when doubtful as to any word. We have in this respect a great lack in the study of Latin literature. For the most learned are these: Varro, Festus, Marcellus; but they are too difficult for the learner and only to be understood by those who are somewhat learned already, and they do not treat of all the matters which we now need. The "Cornucopiae" of Perothus and the work of Calepinus, which we all use, are not sufficiently comprehensive, and lack in scholarship; nor are they safely to be trusted. Perothus accomplished what he could; but what he left undone is considerable. Calepinus, indeed, quaffed the horn of Perothus, but took upon himself to teach others when he himself rather needed a teacher. But in the meantime we must make use of these dictionaries until there shall be forthcoming for the world some other which shall hand down this part of scholarship more happily. Budaeus, in his "Annotationes Pandectarum" and the "De Asse," digs out many subjects hitherto hidden in the deepest darkness, and also has disclosed and brought forward what was unknown even to the learned—a great work for the revival of learning.

You must also read the authors for yourself, and not wait till your tutor has explained them all: else you will never understand anything without it being read and explained to you. So when that comprehensive treatise of words and things shall be prepared it will have to be sought from a very large number of writers on varied subjects from the intelligence of one or another author, whom the teacher explains, and there will have to be given to this study an application neither sluggish nor feeble. Many others must be known by the compiler. There are words and *formulae loquendi* the same in all, by comparison of which the meaning is gathered; so that there is no book which, rightly understood, may not be a teacher of the understanding of many others, if only the judgment is applied and what is already known is sown amongst those topics under consideration. It is not for nothing that it is said that one book is opened by another.

Greek Letters.—Production of Sounds.

Quintilian thinks that the Greek letters could be learned equally well at the same time as the Latin letters. First, the sounds of the letters should receive diligent attention, and, as far as possible, be purely and perfectly pronounced: for it is no greater labour from the first to learn them well than ill, though the fruit is so greatly richer. You will observe how the learned pronounce, and imitate them; for it is necessary that you become equal to them, or at least that you pronounce not unlike the way they pronounce theirs, by comparing yourself with them as your example. On the practice of the right pronunciation Hieronymus Aleander has written his learned "Tabellae." Only take care that you do not so accustom yourself to Greek pronunciation that you pronounce the Latin in the same manner. And do not confound the methods of accents, which are diverse in the two languages. The Greek generally puts the accent on the last syllable; the Latin on the penultimate.

Inflexions.

Then we shall come to the inflexions of nouns and verbs, which you fix thoroughly in the memory, so that ignorance of them shall not compel you to hesitate and blunder later on in your reading. There are the first two books of Theodore Gaza, which teach this subject in very short compass and with skill. Then you can have in collected form the rules of accents and orthography—for the most part in the third book of Theodore Gaza. Lest you should have to read the whole of that volume—a

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troublesome task, and of slight value in many places—the parts selected by Caporlinus from Gaza will suffice at this stage.

First Exercise in Reading of Authors.

It will be useful, for the sake of getting a vocabulary, to hear some authors read by your teacher, and especially some which are easy and clear. Of this kind are some of the Dialogues (especially those which do not make white black), the short orations of Isocrates, Plato, and the epistles of some others, and the fables of Aesop, in which you will understand before all which words are used to signify a particular thing and in what manner they are inflected.

Syntax.

Single words are joined together in speaking. Concerning construction more works are written by the Romans than the Greeks. Gaza, in his fourth book, has taught in a difficult manner. He followed Apollonius, who was himself somewhat misty. Lascaris at great length tried to reduce all Greek words to those five kinds and rules of Latin words—with ill success, as I think. It will be best to notice the forms of Greek speech in the reading of authors, and especially how the idioms of Greek and Latin should differ from each other.

Reading.

To begin with, I think the orators should be read—Isocrates, Demosthenes, Lysias, Aeschines, Aristotle, and part of Lucian. Then the philosophers — Plato, Aristotle, Xenophon, Theophrastus. Next those ironlike writers—Thucydides and Plutarch. If you have learned to know any works of these in a Latin translation, read those works first, so that the understanding of the meaning of the words may be the readier. Before you attack the poets read Apollonius and Johannes Grammaticus on the Greek dialects: then chiefly translate, to begin with, the Attic writers such as Aristophanes, and, afterwards, Homer, the fountain of the rest. Then, Euripides and Sophocles. Have a lexicon by you—say Suidas or Hesychius. It will be helpful to possess a Greek-Latin dictionary, from which a word will sometimes become clearer in Latin, whilst, if it were explained in Greek in the lexicon, you would not sufficiently understand it.

Expositions.

Compare the Greek with its version in Latin if there are verbal translations as the "Fables" of Aesop, the "Tabula Cebetis," and part of the "Dialogues" of Lucian which Erasmus and More translated. Then turn to those who altogether, according to their own fancy, chose their words so as to render freely the sense of the author whom they were interpreting—*e.g.*, Thucydides and Herodotus, a translation of which authors was made by Laurentius Valla. But before all others rank the translations by Budaeus of Herodianus, Politianus, and some small works of Plutarch. Hermolaus, in translating Themistius, has been carried too far away from the original by the heat of youth and by the desire of being ostentatious. The prince of translators, by the consent of every one, is Theodore Gaza (who translated the "De Animalibus" and "De Problematis" of Aristotle and the "De Stirpibus" of Theophrastus). Gaza is the best translator, whether it be for the dignity and elegance of his version or the copiousness of his Latin, in which he vies with Greek, or the happy boldness with which he invents words or takes refuge in analogies so that he may render the Greek more neatly.

The Fruit of Greek Learning (Graecitates).

To the one who has acquired the knowledge of the Greek tongue, the fountains of all branches of learning stand open, for these have issued from the Greeks. He is admitted to the knowledge of the greatest minds in which Greece was always so prolific. Moreover, his copiousness of Latin speech is deeper founded, both because the Latin people sought from Greece the schemes and figures of speech and colours of subject-matter, and also because, when the Latin vocabulary is not at hand for signifying a thing, a term can be borrowed from the Greek, which is so full of words. Nay, also the Latin authors after the time of Cicero were so studious of Greek, or such displayers of their knowledge, that a great part of their idioms were poured across into Latin.

Herewith, my Charles Mountjoy, thou hast what suggestions I thought to be able to help thee to the rudiments of thy studies. Do thou strive hard that thou mayst be, in a short time, thy own great teacher in these matters, and of that highest kind of good people who of themselves, by their own efforts, have acquired a knowledge of all things.

THE DEVELOPMENT OF INITIATION.

AN EXPERIMENT IN THE CULTIVATION OF INDIVIDUAL RESEARCH AND PRIVATE STUDY IN SCHOOLS.

By J. Duckworth, B.A., Organizing Superintendent, Carlisle.

For some time there has been a growing conviction that the product of our schools is not what we should like it to be. Parents make sacrifices to keep a child at school a little longer than usual; yet the child often does not appreciate the effort made on his behalf, and, so far from being interested in his school work, cheerfully leaves on the very day he becomes legally exempt from attendance, and for the next few years avoids any institution that looks like a school.

Yet we see children in the infant schools lively, eager, inquisitive, ready to talk to their teachers, to ask questions, and to "do" things, and we often note with regret that, as they pass through the senior school, their brightness of demeanour fades away, and the boy gradually degenerates into the "professional schoolboy," who takes no particular interest in his school work. What is the cause of this? Briefly, it is that the interests of the child have not been fostered, but by improper usage have been stifled during his progress through the school. Instead of learning how to *do* things, he has had things done for him, and consequently, at the age of fourteen, he is often helpless to help himself. On all hands we hear papers read and lectures given on the method of teaching this or that; what we need far more is some healthy criticism of our ideals and of the organization of our schools.

With the object of attempting to deal with this problem, I set before me, as an ideal, the maintenance and further development of a child's interest and the production of ability rather than the storing up of knowledge. And here it is that one feels the uselessness of indulging in vague generalities about the training of character and so forth, which are so often only an excuse for slackness in detail; we must have clearly before us certain habits or kinds of ability which we wish our pupils to show, and then devise exercises calculated to develop these habits, being always, however, on the watch to let the child take its own initiative, whenever any is shown. The scheme detailed below has already been in use for nearly three years in one of our schools and for shorter periods in others, and the results have been highly satisfactory.

One of the exercises that tend to produce this ability is the practice of intelligent note-taking. How few children who leave school can or do take notes of a lecture which they may happen to attend! They have seldom learnt how to do so. At school the teacher has usually written the summary of the lesson on the blackboard and the children have meekly copied and learnt it; or the teacher has dictated it, with the same result. Memory work has been the ideal, and ability apart from memory has received little consideration. I would therefore suggest that every child in the upper school should practise the art of note-taking. Lessons should be so given as to provide facilities for this; the notes could afterwards be "written up" into an abstract or essay upon the subject of the lesson. This would serve as a starting-point for the exercise of the child's own initiative; the essay would be embellished with illustrations, maps, plans, diagrams, &c., either as supplied by the teacher, or, better still, by the pupil, from his own reading and research or inventiveness, and everything possible done to make his essay complete and exhaustive. A boy needs time for this, and he should have as much time as is needful, provision for which can be made in the time-table. A child who can take notes has acquired some valuable habits—close observation, mental alertness, power to seize the salient points of a discourse, and self-expression in writing and drawing.

Another object to be sought is to enable a pupil to leave school with the ability to use books as a means of obtaining knowledge, and to this end he should learn how to read selectively and to pursue a topic through many pages of printed matter or through many books by means of the index or other indication.

Applying the method to history and geography, say, and with a class of forty or fifty children, the procedure is somewhat as follows: — A supply of suitable books of reference, &c., is provided. One, two, or more of each may be provided, according to probable requirements. A number of questions or topics upon history or geography are framed, typed or duplicated, and

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distributed to the children. The child selects any topic he fancies, finds the necessary books, and makes sufficient notes for his purpose. Having obtained all the information he can from one book, he searches others in quest of further information on the same subject, until he has exhausted all the sources of information at his disposal. In pursuit of this object, he uses information gained from the teacher or from sources outside the school—the more the better. Using the notes he has made, he next writes them into a draft essay, using a lead pencil rather than a pen, as there is less danger of his handwriting suffering, while a higher degree of speed can be attained. Next he goes carefully through the essay, correcting the spelling, improving the composition, and attending to stops, paragraphs, and other matters. This he must do himself, for self-correction is a vital element in the training. He may also obtain further criticism from a fellow-pupil or from the teacher. When he is satisfied with his effort, the essay is written out in a fair hand and, in its final form, with such wealth of illustration, maps, plans, &c., as the nature of the topic and the fancy of the pupil may suggest. It is then filed for the head teacher's inspection, and another topic is begun and treated in the same way. As only two or three pupils can work on the same topic simultaneously in proportion to the number of books supplied, it is necessary that a large variety of topics should be before the children at any one time, and the more topics there are the less probability there will be of the work in any case being delayed for want of books. It is essential that, while there is hard and close work, there shall be no mere hurry. The pupil must not be harassed to "get on" faster nor the teacher censured for not getting more topics worked through; so long as it is clear that there is no dawdling, and that any apparent slowness is due to the nature of the subject or to a desire to exhaust it. Anxiety to show a large number of topics will eventually lead to shallow, superficial work, and, considering its object, the process will become a waste of time. A topic thoroughly worked out and properly illustrated and written up with due care, will do more to interest a boy and give him a habit of doing a thing well than a score of hurried, superficial essays such as form the usual output of the schools. We are feeling more and more the need of something into which the child can put himself and his own best effort, as distinguished from the contrary attitude of following the lead of the teacher in everything.

In such work the teacher's first effort must be to eliminate himself to some extent. He must frankly recognize that the child must be taught to look upon him as only one (albeit a most useful and sympathetic one) of the many means of obtaining information upon any subject in which he is interested. The teacher is the child's guide, helping him at difficult places, showing him the best books and apparatus for dealing with a given subject, and keeping constantly before himself the purpose of the whole exercise—namely, the development of the pupil's interests.

The teacher will also be able to do an important work in showing the pupil how to express ideas and statements in different ways. I recollect seeing a pictorial representation of Tennyson's "Brook" done by a boy of twelve, giving a bird's-eye view of the windings of the river, Philip's farm, and other details of the poem. The incident suggests a method of treatment which might be applied to an extensive variety of subjects—indeed, an important part of the teacher's work will be to suggest different ways in which ideas and facts may be expressed. Drawing and colouring will naturally take a prominent place in any mode of expression; but there are others, and the teacher who shows the most versatility in developing these will be the most successful. Thus with pupils studying history, the construction of a time chart, showing graphically the length of each reign or dynasty, and the position in it of important events, will naturally lead to the acquisition of a good deal of knowledge; maps, plans, diagrams, pictures transferred from cuttings, or drawn and coloured by the child, and other modes of expression will be used to illustrate historical facts and details taken from the text of the book: mere copying, apart from the essay, is of no use for the larger purpose indicated.

In geography, the heights of mountains, the lengths of rivers, areas, populations, and statistics of various kinds all lend themselves to expression by diagrams and graphical methods; a book of travels may be followed out step by step, and a map of the route made. All these exercises will usually be worked in connexion with the investigation and writing up of notes made upon topics given to the children or suggested by them.

It is not intended, however, that pupils should be exclusively kept to this mode of obtaining knowledge. The freshness will wear off, and without change the whole process will become tedious. The teacher will occasionally give a lesson upon some topic arising out of the subject studied, which will vary the monotony of the work and prove refreshing to teacher and pupil.

Further, care must be taken not to make writing the only mode of expression. Verbal expression must have its place in the system, and a weekly debate among the members of the class is a useful way of promoting this. It gives point and purpose to the research and subsequent essay writing, if the pupil reads his effort as a "paper" to the class at one of the debates. It is found to be a real stimulus to good work, and, after the first shyness has worn off, many pupils will show considerable talent for verbal expression and debate. Sometimes subjects of debate may be proposed, pupils opening with papers on the positive and negative side respectively, and a vote taken at the conclusion. Some of our well known topics are well suited for this purpose, and such a subject as "Was the execution of Charles I. justifiable?" will involve the absorption, with added interest, of a considerable amount of knowledge. In all these matters, however, it is the habit developed which is of more importance than the information gained.

Some such method of education as is here proposed seems to form a fitting course for the last years of a child's school life in connexion with literary work. It brings into play all the intellectual forces that he is supposed to have acquired during his school career, and applies them to the practical purpose of enabling him to obtain knowledge for himself. In this way he can make use of all the information he has obtained—of his power of reading, composition, drawing, sketching, and measuring; all these are put to practical use as means of obtaining or illustrating knowledge. It is also a valuable means of forming the habit of self-help and of ability to use books in a student-like manner. It cultivates all the modes of self-expression—by speech, by written composition, and by diagrams and other manual methods. What is required to keep it efficient is that the teacher should be sufficiently well informed to suggest lines of work, to help pupils over difficult places, and keen and enthusiastic enough to fire his pupils with a love of "doing."

There is a possible danger in outlining too clearly for the pupil the line of investigation to be followed, but it is helpful, and indeed necessary, to do so in many cases, and especially at first. If the spirit of debate is fostered, and the listeners to the paper are encouraged to ask questions, and to "heckle" the reader, it will have a good effect in stimulating the latter to be thorough in his reading and preparation.

It may be helpful if I mention a few of the topics that have been worked in the case of a class studying the history of the nineteenth century and its connexions:—

1. What is coal? How has it been formed? What varieties of coal are there? What are the characteristics of each? In what parts of the British Isles do we find beds of coal? When did coal begin to be used in England? How is coal mining carried on? Sketch a section of the workings. What are the dangers to which coal miners are exposed? Explain the principle and construction of the Davy lamp. Write a sketch of the life of Sir Humphry Davy.

2. Trace the causes and events of the revolt of the Greeks against the Turks in 1821. What notable Englishmen joined in it? How did our Government help? and what was the result? Draw a map of the eastern part of the Mediterranean Sea, showing all the necessary names.

3. What were the political disabilities of the Catholics at the beginning of the nineteenth century? How did the Catholics come to be so harshly treated? What connexion had Lord George Gordon with the movement? What caused people to think that these disabilities might now be removed? Why did the Irish take a principal part in getting these disabilities removed? Sketch the life of Daniel O'Connell; show how political leaders in England gradually came round to his views. When and by what Acts were these disabilities largely removed? Do any still remain?

4. Why did women and little children go out to work early in the century? What did they work at? What were the effects of their doing this (*a*) on their health, (*b*) on their moral character, (*c*) on their success in life? When factories and mines began to increase, what part did women and little children take in the work in such places? Find out all you can about this. What wages did they get? What did they lose? Find out what you can about Lord Shaftesbury. What were the Factory Acts? What other laws have been passed respecting working by children? Why do people not want children to work too early? What do children under fourteen work at in your own district?

5. How were poor people cared for in early English times? What

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were trade guilds, and how did they help poor people? When and why did the trade guilds disappear? Who helped the poor then? How did the monasteries help the poor? When these were destroyed, what became of the poor? How were the poor treated in Tudor times? How did Queen Elizabeth's Parliament deal with them (1601)? What changes were made in 1834?

6. Draw several maps of India. Show upon them severally, in colour, the extent of our Empire at each of the following years:—1810, 1820, 1834, 1840, 1850, 1860. What were the characteristics of, and the countries inhabited by the Sikhs, Mahrattas, respectively? Give an account of the massacre at Cabul and of the subsequent campaign of 1839–42. Draw plans of the pass and country, or, better, make a model of clay or cardboard, showing the mountains, passes, &c., and colour. Find out what you can about the causes, events, incidents, and results of the Indian Mutiny. Make maps and plans to illustrate. Describe any evils such as Suttee, Thugs, Child Marriage, Juggernaut, &c., which are disappearing. How is education being promoted in India?

7. Trace the course of African exploration under Dr. Livingstone. Make maps showing what he discovered. Do the same with the discoveries of Stanley and other explorers. How did the Boers come into South Africa? What native people lived there then? Describe their appearance and habits. Make sketches. What were the relations between Boers and natives? How did the British come into South Africa? Describe and illustrate the successive "treks" of the Boers. Give some account of the two Boer Wars, with frequent maps. How did Mr. Cecil Rhodes help the development of South Africa?

8. Give an account of improvements in: (*a*) Modes of iron smelting. (*b*) Mining. (*c*) Making and maintaining roads and canals. (*d*) Pottery. (*e*) Cotton weaving. (*f*) The steam engine, locomotives, steamships. (*g*) Improvements of agriculture. (*h*) Improvements of waste lands.

Among questions of general history are:

1. A study of architecture in England, domestic and ecclesiastical.
2. A study of dress, armour, modes of conveyance, &c., of different periods.
3. Modes of trial, and the gradual development of the present system.
4. A study of the progress of industry, agriculture, development of mining, manufactures, &c.
5. A study of the social condition of the people from serfdom onwards.
6. The rise and decline of religious orders in England.
7. Studies of struggles for great principles—*e.g.*, the equality of all before the law, the right of the Commons only to levy taxes, &c.
8. The development of local self-government.
9. The extension of our Empire.
10. Scientific discoveries and their application to industry.

Practical geographical studies may take the form of maps, contoured or tinted by pupils, to show height of land, vegetation, density of population, rainfall, minerals, &c. Some excellent suggestions are given in Snape's "Geographical Diagrams" (A. & C. Black).

The apparatus required will be an atlas, a reference atlas for occasional use, "Whitaker's Almanack," exercise books, blank or ruled faint or cross faint for maps, diagrams, and other purposes (many teachers prefer "blocks" or loose sheets), ruler, pen, pencil, rubber, box of colours and brushes, with as many as possible of good text-books, works of reference, and readers upon different subjects of study.

I have dealt only with literary subjects, for it is in connexion with these that the danger of stifling individuality seems greatest, for they naturally lend themselves to lecturing and methods of teaching which often produce quick, showy results along with little, if any, real interest in the subject.

In conclusion, and at the risk of being tedious, I must repeat that the success of the scheme will depend upon the teacher. He must be able to efface himself to a certain extent, to avoid fuss and bustle, and to act rather as the servant of the pupil than as his master. Give the child a suitable environment of books and other apparatus, let the teacher create an atmosphere of quiet, strenuous endeavour, and leave the natural ability of the child to develop itself.

And, further, so long as our streets are filled every evening with an aimless crowd of youths and girls who have only recently left school, and can find nothing better to do than loaf about, we shall need to be constantly asking ourselves whether our educational machinery and methods and ideas of training cannot be improved so as to bear more effectively upon this evil. Many causes, of course, are at work in producing this state of things, but educational agencies are a very important factor in making an impression upon it, and the greater the number of young people who can be turned out of our schools self-reliant and with the intellectual habit developed, the greater will that impression be. Any scheme, therefore, that appears likely to develop interest and power of using books deserves encouragement as an attempt to deal with a serious social as well as educational problem.

THE TEACHING OF MATHEMATICS.

INTERNATIONAL MOVEMENT FOR REFORM.

By Louis C. Karpinski, University of Michigan.

[From the *School Review*.]

The international character of the movement toward reform in elementary teaching is attested by a Commission to investigate the teaching of mathematics which is being formed at the direction of the International Congress of Mathematicians which met at Rome in April, 1908. The formation of such a Commission was proposed in the Section of the Philosophy, History, and Pedagogy of Mathematics by Prof. David Eugene Smith, of Columbia University; the Section recommended the appointment of such a body to the Congress, which empowered a Committee—consisting of Prof. Felix Klein, Göttingen, President; Sir George Greenhill, London, Vice-President; and Prof. H. Fehr, Geneva, Secretary—to appoint the Commission. This Committee reported in September to the Cologne meeting of the Deutsche Mathematiker Vereinigung the plan of organization of the Commission. Representatives of Italy, Germany, France, England, the United States, Greece, Russia, Austria, Belgium, Denmark, Spain, Holland, Sweden, Hungary, Norway, Portugal, Rumania, and Switzerland are to form the executive body, while representatives of practically all other civilized nations are invited to participate in the meetings of the organization. General direction is lodged in the original Committee. It is proposed that the investigations begin immediately and that reports be made to the mathematical and educational societies of the various countries in order to permit of full discussion. Final reports are to be made to the next International Congress of Mathematics at Cambridge, England, 1912.

The scope of the work includes all schools in which mathematics is a subject of instruction, from primary schools to the University. The plan of studies, the systems of examinations, the methods of teaching, the preparation of teachers, laboratory methods in mathematics, the correlation among the different branches of mathematics, and the correlation between the purely mathematical and the applied branches are all to be examined not only with regard to the actually existing conditions, but also with a view to ascertaining the tendencies shown by the changes effected in the last two decades. Explicit statement is made in the preliminary report of the Committee that it is not the aim of the Commission to propose programmes which should be adapted to all countries, but rather to suggest those general principles which should inspire the teacher. The American delegation in charge of the investigations in the United States consists of Prof. William F. Osgood, of Harvard University; Prof. David Eugene Smith, of Columbia University; and Prof. J. W. A. Young, of the University of Chicago.

In the United States the National Educational Association attacked these questions as early as 1892 and 1893 through the well known Committee of Ten and the Committee of Fifteen. More recently reports have been made on proposed changes to the Mathematics Section of the Central Association and the numerous State organizations of teachers of mathematics. In England the widespread Perry movement has had as its aim to make the work in mathematics more useful and practical. The French school curriculum has lately been revised, while in Austria and Germany recent reform committees of national and sectional learned societies are too numerous to mention.

Humanization of School Work.

For fifty years, movements to humanize the work of the schools have been in progress. As a partial result of this effort Nature study, sewing, cooking, and like subjects have been introduced in the curriculum. Many educators believe that this method of humanizing the work, at least in the extent to which it is often carried, is too expensive of time and energy. The pupils scatter effort among so many studies that they obtain little real training. It need hardly be stated that training comes from consecutive application along one line of activity, be it carpentry or be it Latin. Tinkering is more destructive of ability in children than it is even in adults. Probably in the course of a few years a readjustment will eliminate or curtail in time subjects like cooking, sewing, and iron-work. As elective in high schools or even in elementary schools these subjects could be made effective agents for training, but reading, writing, arithmetic, and geography must again occupy some-

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thing like their old place in instruction. These older subjects, too, have been humanized—made vital and immediate. No re-adjustment can eliminate the beneficial effect on the general studies of the influences which brought the so-called practical studies into the curriculum.

Vitalization of Elementary Work.

It may not be amiss to recount some of the ways in which this humanizing effort has made itself felt in the various branches of elementary instruction.

In the study of English grammar can one imagine anything farther removed from literature and life than the work in parsing and diagramming? To-day that work is abolished. The children write compositions on very prosaic and real subjects: actual trips to the woods, visits to factories, occurrences of vital interest to the children, and things of which they have some real knowledge are described by them in their own words.

The work in geography begins not with the strange maps of some stranger lands, but begins with talks about the rivers and hills and valleys of the child's own neighbourhood. As that pioneer in Nature study, Dr. E. A. Sheldon, has said in regard to the study of geography:—"The first duty by the way of laying a foundation is to lead the child to properly observe everything in Nature about him—the air, the water, the sky, the clouds, the temperature, the animals, the plants, the rocks, the soil, the hills, the valleys, the streams, the habitations, the occupations—in short, all that pertains to that part of the earth which he knows and its environments." From this the child goes out to county, State, country, and by natural steps to foreign lands.

The day of the spelling book is passed; the child spells when he needs to spell, and learns a given word when the need for that word arises in actual life.

The change from the alphabet system to the word and sentence method in reading is in entire accord with the new programme, even as the change from the old style of first, second, third, fourth, and fifth readers to the beautifully illustrated—and, to the child, intensely interesting—readers of the present day is a step from formalism to life.

The movement has not been simply to humanize the work in the sense of making it correspond to the work of adults, but rather to vitalize the instruction by using material real to the child at his stage of development. Widespread and deep is the recognition of the fact that education is life, not preparation for life. Training is involved; life in the largest sense is the aim of the school and the development of high ideals of living is recognized as the teacher's function. Keeping this in mind there is no distinction between cultural and utilitarian aims. Capability of enjoying the best things in literature and art, ability to understand the great questions of the day and the small ones are powers which our schools must aim to cultivate.

The Task of Mathematical Reform.

The proposed reforms in mathematics are in harmony with the changes outlined in the other branches of study. The developments can be understood only in the light of the general movement.

A rational child study leads in all the work to arithmetical problems which effect a correlation between Nature study, geography, history, and mathematics. The difficulties of the correlation are not yet cleared away, but the newer texts show an admirable beginning. The slightest attempt to adapt the work to the child precludes the possibility of rules without reason. Nor does this programme eliminate drill work in abstract problems. The child in play naturally turns to rhythmic counting in many games as one outlet for his activity. Abstract work satisfies this natural instinct.

The Committee of Ten and the Committee of Fifteen both urged to abridge the course in arithmetic with an earlier introduction of algebra. This curtailment is in process in the discarding of compound proportion, arithmetical cube root and square root, and a great part of the so-called commercial arithmetic. All along the line complicated exercises (which, in fact, serve only to obscure fundamental principles) are cut out, and simple exercises which emphasize the reasoning are substituted. Again and again it is being noted that mathematical thinking as required by life is to be cultivated in the study of mathematics.

Hard-and-fast programmes of number work for the primary grades are disappearing. Complete suppression of number work

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is neither desired nor possible. The child is constantly confronted with the numerical side of life, and the school can easily avail itself of these outside stimulations.

Connected series of problems on milk supply, on the school garden, on city distance in blocks—to cite only a few—offer abundant live material for number work in the primary grades. Family-expense accounts, statistics from census tables, transportation problems including electric railroads, steam railroads, and water routes, banking business, local industries, city, State, and national finances present problems that can be adapted to arithmetic work in the upper grades.

The artificial barriers between arithmetic and algebra are broken or breaking; happily no more will examiners request a solution "by arithmetic and not by algebra." The elementary algebra work, while not so difficult as the arithmetic it is replacing, offers fully as much content.

The movement to teach geometry and algebra side by side is an attempt to emphasize mathematical reasoning; a similar effort to teach trigonometry in connexion with the related theorems in geometry brings out the intimate connexion between these two studies. The machinery of our school system is too complicated to permit such radical changes to be rapidly made; but a wider knowledge of these movements is needed among teachers of elementary mathematics.

The Commission on the Teaching of Mathematics has a tremendous task before it. The ground has been well prepared and an authoritative statement of the fundamental principles which should inspire the teacher of mathematics may expect a fruitful reception from enthusiastic teachers the world over.

HEAD MISTRESSES AND THE FRANCHISE.

The Head Mistresses of Girls' Public Secondary Schools have forwarded to the Prime Minister the following Memorial in favour of the extension of the Parliamentary Franchise to duly qualified Women. Many hundreds of signatures, including the foremost names in the profession, are appended.

We, the undersigned, being head mistresses of public secondary schools in the United Kingdom, with a total attendance of forty thousand pupils, desire to put before you the reasons that compel us to join in the demand that the Parliamentary franchise should be extended to duly qualified women. We share with all women of the country the hardships that fall on every unrepresented class from mistakes in legislation both of commission and of omission, arising from lack of knowledge, lack of interest, lack of sympathy on the part of the legislators. We suffer, too, with all the tax-paying women of the country the injustice that compels payment of taxes and refuses the return due to that payment; but our position as professional women drives home to us the special anomaly of our position, and it is on this we desire to address you.

We are members of a great profession which undertakes duties towards the State that are second to none; we have been chosen from the ranks of that profession by governing bodies who have judged us to be especially fit for the exercise of great responsibilities. We are placed side by side with men who have been similarly elected for similar duties. Like them, we labour for the moral, intellectual, and physical welfare of the children placed in our charge; like them, we have to guide and control a large body of subordinates—in some cases men as well as women; like them, we give much of our scanty leisure to the public work of the districts in which we live; like them, most of us are graduates of some University; like them, too, we make compulsory contribution from our yearly earnings to the national exchequer. Unlike the head master, however, who has the Parliamentary franchise twice over—as a tax-payer and as a graduate—the head mistress is relegated by the State to the same class as the male convict and lunatic. She may—nay, must—do the work of a citizen, but she may not have a citizen's privileges.

Education in this country has been for many years under partial Government control, but it is only within the last decade that this control has reached girls' secondary schools. Recent years have seen statutes and Orders in Council that affect directly our schools, our pupils, ourselves. An inspectorate of secondary schools has been established. Our schools had been developing for thirty years on lines very different from boys' schools, but their tradition has been ignored and no woman representative of girls' secondary schools has yet been appointed to the permanent staff of Inspectors. We attribute this to the fact that we have not been able to bring Parliamentary pressure to bear in the right quarters, and our schools are suffering in consequence.

In another matter, that of Teachers' Registration, women teachers have the same grievance as men, but, at a time when it is of the greatest importance that the profession should unite in bringing pressure to bear in Parliament, only those who possess the vote can act effectively. Our want of political power here directly affects us in a professional question.

Other subjects on which we desire to be able to influence legislation, since we hold opinions on them with the strength which comes from practical knowledge (though these opinions are not necessarily unanimous), are: the religious training of children, the medical inspection of children, the care of the feeble-minded, child labour, compulsory school attendance, the feeding of school children at public cost, school age, the facilities for the transfer of pupils from elementary to secondary schools, continuation schools, reform of the Universities. But on all we are driven back to the academic attitude only, and our views command just the amount of attention usually accorded to academic views.

We desire enfranchisement, then, for the protection of our sex, of girls' schools, of our profession, but, above all, because we believe that with our votes we could help the country which at present declines us as citizens. Knowing that men's work is imperfect without the co-operation of women, we would desire to see not only the work which particularly affects ourselves, but the whole work of the country perfected, as it can only be when the gifts of women as well as those of men can be freely given for its services. This high responsibility for the country will be fully realized by women as a whole, and instilled into the boys and girls of the nation when, by enfranchisement, women are given the same stake in the country as all other citizens.

REVIEWS.

Science and the Soul.

The Genesis and Evolution of the Individual Soul scientifically treated; including also Problems relating to Science and Immortality. By the Rev. J. O. Bevan, M.A., F.G.S., Assoc.Inst.C.E., F.S.A., sometime Prizeman, Exhibitioner, and Foundation Scholar of Emmanuel College, Cantab., Rector of Chillenden, Dover. (2s. 6d. net. Williams & Norgate.)

Mr. Bevan boldly attacks a problem of extreme difficulty—the origin and the development of the soul of man. This problem has mostly been treated within the sphere of religion and theology, but Mr. Bevan lays aside his religious and theological armament, and girds himself to the enterprise with the weapons and methods of science, biological and physical. This course, it must be conceded, he is perfectly entitled to adopt, without theological or other censure. Yet, he tells us, "he is conscious that the subject transcends science; and, for complete solution, he turns to philosophy."

When a correspondent asks Mr. Bevan "whether the Australian aborigine has a mind—a soul," he replies that everything depends upon the definition. In the present volume Mr. Bevan postulates "that man possesses *one* soul, and only one, whatever the term may designate." What, then, does Mr. Bevan designate by the term? His statement is vague—perhaps inevitably so. "A strict definition of terms—body, mind, soul, spirit—is unnecessary for our present purpose," he says, "especially as it is contended in this dissertation that successive and concurrent bodily, mental, moral, and spiritual manifestations alike are but different aspects of the undivided and indivisible Personality—one manifestation being in excess at one time, another at another." He is content, therefore, "to take those definitions which are simplest, and on which all thinkers would agree, as a basis from which to start." However, one cannot go far without discriminations; and accordingly Mr. Bevan by and by opposes the soul to the body—"that part of us which is 'not body.'" Still he refrains from a more positive statement: "What is certain," he remarks, "is that in this soul is resident the supreme Ego, the individual personality, the *primum mobile* of thought, feeling, and will." "The Body, through its senses, brings the outer world into contact with the Soul"; but what is the nature of the formal union between Body and Soul Mr. Bevan does not determine. Nor, indeed, does it appear that union is necessary or is always maintained. "In the most general terms, perhaps, we may be allowed to suggest," he writes, "that the Soul is a derivative essence, which exists near or in remote space, separately or pantheistically, of such a nature and power that (although it may be at an infinite distance, or of a higher dimension than the body) it is capable of using the brain and nervous system generally, after the manner of an instrument—itself constituting part of the self-same instrument!—to work its will and register its decrees." When Mr. Bevan comes to speak of the soul and immortality, it is not easy to distinguish his notion of the soul from that of the theologians. The difficulty of definition may well be admitted: the embarrassment caused by the lack of definition is not to be ignored.

(*Continued on page* 384.)

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Assuming Mr. Bevan's position, then, we inquire into the origin of the soul. The investigation is, in the first place, biological. Each contribution of the parents "has a special characteristic as a soul-element: the union of these two soul-elements constituting the soul of the child that is to be." Hence "a distinct characteristic personality, linked on to a long chain of ancestors, until we reach the first pair of humans." But what of the souls of the first pair? For the adumbration of these we must go back to the original cell. But, "where the *original* cell came from, whence its powers arose," says Mr. Bevan, "we cannot tell, and it is at present useless to speculate." Still, how does Mr. Bevan know about the alleged soul-elements and their union? The analogy of the mixture of oxygen and hydrogen to form water is confessedly "imperfect." Then, to avoid materialism, Mr. Bevan considers it "thinkable that each soul is an emanation from the One Universal Soul, since—apart from a Universal Soul—we cannot conceive of anything in this Universe of Unities, whether soul or body, material or immaterial, that could have an independent, self-creative origin."

For the purpose of his argument, Mr. Bevan strongly insists on the physical basis of all sentient life—*i.e.*, on the existence of a "world-stuff"—as the protoplasmic material which enters as "warp and woof" into the texture and constitution of every living thing in the universe, whether vegetable or animal. (See Appendixes C and D.) Moreover, he asserts that the germ-cells of each male and female organism are (in a measure) distinct from all other cells in the bodily system, and that it is a product of those germ-cells alone, from both sides of the parentage, which unite at a certain physiological moment in order to constitute the body-soul of the new personality thus brought into being.

Mr. Bevan postulates "that Matter and Motion alike belong to this embryo soul—but that its ultimate structure and function are largely determined by its environment and by the accidents and incidents of the sphere and condition of life into which it is born." The attribution of matter to the soul raises difficulties. If there is matter in it, how is it discriminated from body? Is it a scientific fact that there is matter in it? And, supposing there is, then the question of the determination of its ultimate structure and function plunges us into the most abstruse and most debated problems of the several virtues of stock and environment. Yet, we have to remember that new views of matter and force have been recently enunciated. Mr. Bevan regards the discussion of the soul—or what is more or less analogous to the soul—in animals as foreign to his present purpose: "the conclusions reached would not materially affect those relating to the lot of man." We will not follow Mr. Bevan into his speculations on death, resurrection, and immortality. It is hardly necessary to say that the discussion is ingenious, independent, and courageous. Every step is, of course, beset with difficulties, and, after all, pure science does not take us far, even by analogy. The argument overflows into a number of interesting appendixes. In a case where definite results do not appear to be at present obtainable, it matters little whether one accepts or rejects Mr. Bevan's conclusions: the essential thing seems to be the argumentative effort. And certainly Mr. Bevan presents views and suggestions that are not only interesting, but worthy of examination by experts in the fields he has chosen for his appeal. He has evidently devoted long and serious study to the subtle and abstruse questions he discusses, and he treats them with a mental detachment and strenuousness that command respect. Our brief indication of the heart of his position (even if we have quite grasped it) is necessarily insufficient: the cumulative analogical detail must be sought in the volume itself.

Infinite Series.

An Introduction to the Theory of Infinite Series. By T. J. I'A. Bromwich, M.A., F.R.S. (15s. net. Macmillan.)

Prof. Bromwich writes not only for the mathematical scholar, but also in the interests of the student of mathematics. In fact, the present volume has for its foundation the substance of college lectures delivered by the author, and by its publication the student's library acquires another very important accession to its mathematical section. Even whilst passing through the press, ostensibly in its original form, the work has been enlarged, so that the scope of its contents has, as far as possible, been extended in proportion to the advance made by the latest researches in the subject. Moreover, as a natural consequence of the critical investigation to which he has been submitting his materials, the writer has himself arrived at fresh results, and is thus a contributor to the growth of the theory as already known when he commenced his undertaking.

The volume opens with the consideration of what is the essential characteristic of a succession of quantities forming a sequence, and the writer next distinguishes carefully between convergent and non-convergent sequences, the latter being further subdivided into divergent and oscillatory. By this classification the author notifies his sympathy with the views of those who are opposed to the inclusion in one category as *divergent* of all sequences (and as a consequence of all series) whose terms (and the sum of whose terms) do not tend to a definite limit. In the first chapter, also, monotonic sequences are defined; the general principle of convergence claims attention, with the necessary condition for its existence; whilst various fundamental truths respecting limits, upper and lower limits, and maximum and minimum limits, are brought before the reader's notice. The writer makes frequent use of maximum and minimum limits, as they enable him in many cases to shorten his demonstrations. From the second chapter onward Prof. Bromwich presupposes, on the part of a student of his work, a knowledge of the principles and methods of the differential and integral calculus. Such knowledge he believes to be a requirement for profitable study of the theory of infinite series. Further, the assumption that he is at liberty to use freely the powerful instrument afforded by the calculus offers facilities to the author for the condensation of proofs.

The scheme of the work involves next the discussion of series of positive terms and of the leading tests for their convergence. Series in general then occupy the reader's attention, and the author necessarily differentiates between convergence and absolute convergence. He proceeds to discuss further tests and to note the effect on a series of any derangement of the terms of which it is composed. Chapters v.–ix. treat successively of "Double Series," "Infinite Products," and of series of several fundamental types, *e.g.*, series with variable terms, power series, &c. It is in chapter x. that the writer takes up the subject of complex series and products, ably giving a connected discussion of the theory and interweaving with it theorems and tests of convergence associated with the well known names of De Moivre, Abel, Dirichlet, Weierstrass, and others. The contents of chapter xi. and, for the most part, of the Appendixes are outside the original plan of the work and help to bring the volume up to date, thereby greatly enhancing its value as one of the standard text-books of Pure Mathematics.

Further, there will be found in the Appendixes rigid proofs of much whose truth is assumed, at least to a great extent, at the commencement of the work. The rigorous discussion has been postponed to the later pages in order that the beginner may not be unnecessarily burdened at the outset, and that the discussion may thus be rendered more attractive to him. It may, in conclusion, be observed that many theorems excluded through want of space from the body of the text have been placed amongst the numerous exercises. There is every reason to believe that Prof. Bromwich's treatise will be invaluable to those for whom it is intended.

English Political History.

"The Political History of England."—Vol. IX., *The History of England from the Accession of Anne to the Death of George II.* (1702–1760). By I. S. Leadam, M.A., formerly Fellow of Brasenose College, Oxford. (7s. 6d. net. Longmans.)

The volume covers less than two generations, and one half of it is devoted to the dozen years of the reign of Anne. Considerable space is necessarily occupied with the description of the multifarious fighting on land and sea against France and Spain: the campaigns of Marlborough are narrated succinctly, clearly, and soberly, the specific difficulties and the decisive movements being pointedly indicated. The general settlement accomplished by a series of treaties at Utrecht is not reached till near the end of Anne's reign. The political intrigue that ran through all the national business of the period forms a large part of the framework of the picture. It is curious to observe how much of the political action and of the commercial policy carries instruction for us to-day—if our politicians and voters had any practical regard for the maxim that history teaches by examples, and did not slackly acquiesce in the other maxim that history repeats itself, however expensively. At home the important movement of union with Scotland was at last effected, not very creditably indeed, but still effected; and Mr. Leadam's description is well informed and scrupulously fair, though he gives little idea of the extreme difficulty of

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maintaining it under the unconstitutional legislation and international friction of 1709–14, or of the causes that turned the tide of repugnance under the next sovereign, notwithstanding the outbreak of 1715. The rebellions of 1715 and 1745 are fully and carefully narrated, but the political moral is not adequately pointed out by an exposition of causes and underlying supports. The same deduction falls to be made on other occasions: with an excellent marshalling of the events, there is a paucity of indication of essential causes and of definite consequences. Nor do we always find estimates of the more prominent characters, except by silent inference from what we are told of their public action. The beginnings of our Indian Empire arise within Mr. Leadam's period. They are outlined strongly, but the compression detracts from the effectiveness of the presentation, and sometimes leaves ambiguity in the mind of the reader. For instance, the account of the "atrocity" of the Black Hole of Calcutta leaves it open to the reader to believe that the Nawab deliberately perpetrated it; indeed, rather suggests that view. The final chapter sketches briefly, but suggestively, the movements in literature and in manners. On the whole, the facts of the history of the period are assiduously sifted and deftly presented in due relative proportions. The style is plain, simple, and interesting. A very useful account of the authorities is given in an appendix; a second appendix contains a most convenient list of the administrations; and there is a very full index.

GENERAL NOTICES.

CLASSICS.

The Acharnians of Aristophanes. By W. Rennie, M.A., Fellow of Trinity College, Cambridge, Lecturer in Greek at the University of Glasgow. (6s. net. Edward Arnold.)

This is an unpretentious but very thorough and capable piece of work, which will make room for itself among the many editions of the great farce of Aristophanes. The introduction deals pointedly with the various aspects of the play, and particularly with the "strange relationship" between Aristophanes and Callistratus in the production of this and other plays. The commentary is very full, explaining and illustrating all difficulties, whether of matter or of expression. Mr. Rennie has availed himself of the whole range of learning on the subject, and treated it all with constant independence and generally with very sound judgment. The textual criticism is judiciously conservative; and the philological handling is markedly competent throughout. This is not only the best edition of the play that we have seen, but also one of the most able and luminous classical expositions of recent years. There are separate Greek and English indexes.

(1) *Limen: a First Latin Book.* By W. C. Flamstead Walters, M.A., Professor of Classical Literature in King's College, London, formerly Master in Christ's College, N.Z., and R. S. Conway, Litt.D., Professor of Latin in the University of Manchester, formerly Fellow of Gonville and Caius College, Cambridge. (2s. 6d.) (2) *Limen Appendix: Suggestions for Teachers on the Oral Method.* By the same Authors and R. H. Rees, B.A., Assistant Mistress at Ladybarn House School. (6d.) (Murray.)

The authors combine three main objects: "(1) to bring the pupil as soon as possible to the stage of reading Latin authors; (2) to teach him as much as possible of the use of the forms of the language in and during the time in which he is learning them; (3) to use as far as possible the fruits of recent inquiry in historical and comparative grammar, so as to simplify and enliven the harder rules of accidence and syntax by indicating briefly and clearly how the rules themselves grew up." These objects, which of course are by no means new, are closely bound together, and each is furthered as far as seems reasonably possible within the limits. For beginners of eleven, the work constitutes a three years' course; for beginners of twelve to fourteen, a two years' course: in either case, it should enable "the average boy or girl in the average school" to matriculate in Latin, and fit the more than average pupil to begin a more specialized course. The simpler parts of the active form of the verb are tackled at once, and the other parts of speech are gradually worked in, abundance of exercises and reading lessons being carefully provided. The passive voice and more difficult constructions are reserved to a later stage (Part II.). A summary of the accidence is given in an appendix; and vocabularies, &c., complete the volume. The oral method is recognized from the beginning, but it is not unduly pressed; and the "Limen Appendix" furnishes full suggestions for teachers that wish to use it. The care and labour of the authors are manifest; their effort to render the newer ideas of teaching Latin as effective as possible within the scope of an elementary volume is entirely laudable; and it is to be hoped that their method will produce the desired results in a shorter time and with less drudgery than the older system. Their strongest ally, we apprehend, will be the more

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advanced age of commencement. In the "Limen Appendix" Miss Rees consistently speaks of "the children": we should hope they are well on to fourteen, and have got a good grip of English.

MATHEMATICS.

Modern Geometry. By C. Godfrey, M.A., and A. W. Siddons, M.A. (4s. 6d. Cambridge University Press.)

An attractive volume, both in respect of the contents and the mode of issue. It serves as a sequel to the work on "Elementary Geometry" written some few years since by the same authors, and includes many of those portions of modern geometry which are most generally useful to the student, whether he is working for a Pass or for an Honours University degree. It forms, moreover, a valuable introductory treatise on the subject for the intending specialist in mathematics. As a matter of course, the significance of *sense* in connexion with geometry, the elements of the modern geometry of the triangle, the theories of harmonic section, of pole and polar, of inversion, &c., are discussed. The necessity for the concept of infinity forms the theme of an early chapter: but, interesting as the pages devoted to the subject are, they seem scarcely sufficient to do more than upset the young student's preconceived ideas, and we confess that we do not like the term "mathematical fiction" as applied to the concept. It is quite otherwise with the excellent note on solid geometry and the principle of duality, in which the reciprocal character of points and planes and the intermediate position occupied by lines stand out very forcibly. The large collection of exercises included in the text-book to some extent owes its varied character in point of difficulty to the wide experience in teaching possessed by the writers. This has suggested to them the benefit of leading up from very simple questions to problems of standard type. A notice of the work would be incomplete without comment on the care evidently bestowed on the details of production. It will suffice to mention two points of excellence—namely, the choice of type and the sympathetic execution of some of the more complex diagrams.

Elementary Geometry. By W. A. Knight, M.A., B.Sc. (2s. 6d. Cassell.)

The author treats, in a generally useful manner, the substance of Euclid's first four Books, together with the elements of ratio, proportion, and the theory of similar figures. A number of the more important "riders" to Euclid's propositions find place in the text as additional pieces of bookwork. The subject is viewed in its theoretical and practical aspects, and, although the work is not absolutely free from the faults noticeable in so many of the recent elementary text-books, still it is evident that matters of detail have received close attention. The volume is intended to meet the requirements of students reading for the various Local Examinations.

School Algebra. Parts I. and II. By W. E. Paterson, M.A. Cantab., B.Sc. Lond., Mathematical Master, Mercers' School, London. (2s. 6d. each; with Answers, 3s. each. Clarendon Press.)

These volumes have been arranged with much care. They comprise a course suitable for upper as well as lower forms. The treatment is based on the ideas with regard to teaching which have been growing more and more popular during the last few years. The text is simple, clear, and explanatory, and the writer makes a practice of preparing the way for the discussion of a new principle—possibly, even, for its rediscovery by the pupils. This he effects by the introduction, in preceding examples and exercises, of those difficulties which necessitate the recognition of the truth of the principle in question.

SCIENCE.

Outlines of Chemistry, with Practical Work. By Henry John Horstman Fenton, M.A., Sc.D., F.R.S. First Part. (9s. net. Cambridge University Press.)

Dr. Fenton here outlines the method that long experience has suggested to him for making the best of the time of his students in General and Physical Chemistry for the Natural Science Tripos at Cambridge. "A special feature of the course is the interdependence of the practical and theoretical teaching, the students, after each lecture, performing a series of experiments which illustrate as far as possible the general principles, laws, or facts which have been discussed." Dr. Fenton accordingly sets out the fundamental principles in concise but lucid form, sending his students to the standard text-books to fill out his exposition; and he places well devised experiments in conjunction with the statement of principles, so as to drive them home—only in outline, however, for he aims at cultivating self-reliance, and at "inducing the students, as far as possible, to devise their own method, to plan and fit up suitable apparatus, and to regard the work rather in the light of a research than as an exercise." The volume certainly supplies work enough for two extremely busy terms: the work of two more terms will form the subject of another volume which will, of course, be in immediate demand. The handling of the matter, theoretical and practical, is of the highest order. There are twenty-five figures.

We give a very cordial welcome to a fourth edition of *The Recent Development of Physical Science*, by William Cecil Dampier Whetham, M.A., F.R.S., Fellow of Trinity College, Cambridge (5s. net, Murray). Some additions have been made here and there, but no striking new branches of knowledge have appeared so as to necessitate any fundamental change of plan. It is most gratifying to observe the awakened interest in the problems with which the volume deals; and no inconsiderable part of the credit is due to the ability and lucidity of the author.

We gladly seize the opportunity of the reissue of Mr. Whetham's work to repair the accidental, but none the less regrettable, omission to notice a similar volume that was suggested by it: *Recent Progress in the Study of Variation, Heredity, and Evolution*, by Robert Heath Lock, M.A., Fellow of Gonville and Caius College, Cambridge, published by Mr. Murray in 1906. The developments recorded and explained by Mr. Lock are no less important and interesting than the remarkable story of Mr. Whetham: the theories of evolution associated with the names of Lamarck and Darwin (with the criticisms of Herbert Spencer and others), the work of the Biometricians (Galton and Pearson), the theory of mutation (de Vries), the study of hybridization (Kölreuter), Mendelism, &c. The results of such inquiries promise to be of incalculable value in their commercial and social bearings; and in some cases the promise has already reached fruition. Mr. Lock writes with ample knowledge, with conspicuous fairness, and in a plain and lucid style. He is most careful to distinguish between what is proved and what is not adequately supported by evidence. His work ought, on the merits both of matter and of handling, to be quite as popular as Mr. Whetham's. When a new edition appears, we hope Mr. Lock will add short biographies of all the investigators whose theories he discusses: Mendel is, we think, the only one whose biography he outlines in the present edition.

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[Revised edition. Theory fully shown; applications to business and science constantly kept in view; abundance of exercises; answers.]

Arithmetic, Practical, for Schools. By W. G. Borchardt, M.A., B.Sc., Assistant Master at Cheltenham College, formerly Scholar of St. John's College, Cambridge. 4s. 6d., with answers; 3s. 6d., without answers.

[Abundant exercises, problems, and (125) test papers.]

Calculus, The, and its Applications. By Robert Gordon Blaine, M.E., Assoc.M.Inst.C.E., &c., Lecturer at the City Guilds Technical College, Finsbury. 4s. 6d. net. Constable.

[Based on long experience of teaching (under Prof. Perry). Numerous problems fully worked out; 79 figures.]

Formen- und Invariantentheorie, Allgemeine. Erster Band: Binäre Formen. Von W. Franz Meyer, in Königsburg i. Pr. M. 9.60 geb. Leipzig: Göschen (Sammlung Schubert XXXIII).

Geometry, Modern (Godfrey and Siddons), Solutions of the Exercises in. By C. Godfrey and A. W. Siddons. 4s. net. Cambridge University Press.

[Very helpful to teachers.]

Geometry, The Elements of, in Theory and Practice. By A. E. Pierpoint, B.Sc., sometime Examiner in Mathematics to the Allahabad and Punjab Universities. 3s. Longmans.

[Parts I., II., and III. together, comprising the subject-matter of Euclid I., II., III, IV., 1–9 and 15, with experimental sections and additional theorems and problems. 1,259 exercises; hints to solutions of the more difficult; sets of questions for examination; 346 figures. Elaborate.]

Mathematics, American Journal of. July, 1909. (Kegan Paul.)

Mathematics, Annals of. July, 1909. (Longmans.)

Practical Manuals.

Cookery, Instruction in. By A. P. Thompson, Instructress to the London County Council. 2s. 6d. Methuen (Text-Books of Technology).

["Does not pretend to be a recipe book"—though some few recipes are given—"but to give practical hints on the conduct of classes." Most useful. Ten illustrations.]

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Cookery Recipes, Plain. Nelson.

[Published under the auspices of the Edinburgh School of Cookery and Domestic Economy, Limited. A varied, comprehensive, and excellent collection for home use in families of moderate incomes.]

Dress Cutting and Drafting, "Up-to-Date." By M. Prince Browne, Examiner in Dressmaking of the Teachers in Training at the University College of South Wales and Monmouthshire, &c. In four Parts. 1s. each. Horace Cox.

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Woodwork for Schools on Scientific Lines: a Course for Classwork or Private Study. By James Thomas Baily, Head Master, St. Albans Technical School, and Manual Training Staff Instructor, Hertfordshire County Council, and S. Pollitt, B.Sc., Head Master, Southall County School, Middlesex. 2s. Also in three Parts, each separately, 9d. Murray.

[Links the classroom with the laboratory and workshop, and gives due prominence to the practical usefulness of the subject learned. Construction of science models forms an important portion of the course. Excellently devised series of 60 lessons; 122 figures.]

EDUCATION.

Board of Education. Regulations applicable to Schools for Blind, Deaf, Defective, and Epileptic Children (from September 1).

Cambridge University. Higher Local Examinations.—Class Lists and Supplementary Tables, June, 1909.

Johns Hopkins University Circulars. No. 6: Register of the University, 1908–9. No. 7: (1) The Botanical Garden of the University; (2) Notes in Botany and Zoology; (3) College Courses for Teachers. No. 8: (1) Programme of Courses, 1909–10; (2) Commencement, 1909.

London University: King's College for Women—Syllabus of Lectures, 1909–10.

Millersvillian, The: Fifty-fifth Annual Catalogue [= Calendar] of the First Pennsylvania State Normal School, Millersville, Lancaster County, Pa.

Staffordshire County Council Education Committee. Directory for Higher Education, 1909–10.

MUSIC.

Church Music Society Reprints.—No. 17, Three Chorales, by J. S. Bach: (1) All Glory, Laud, and Honour; (2) Now Cheer our Hearts this Eventide; (3) Awake, thou Wintry Earth. 4d. Henry Frowde.

Novello's School Music (edited by W. G. McNaught). — (1) Jack Horner's Ride (cantata, with or without actions, for children). Words by H. A. L. Rudd; Music by Joseph W. G. Hathaway. 2s. (2) Ho-Ho of the Golden Belt (humorous cantata for children's voices). Words by John Godfrey Saxe; Music by Herbert W. Wareing. 1s.

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Novello's School Songs (edited by W. G. McNaught).—Book 200, The Children's Winter Day (song-cycle for young children). Words and Music by Myles B. Foster. 9d. Book 210, Garlands of Songs for Children (Set IV.). Arranged to be sung in unison consecutively by W. G. McNaught. 6d.—Grade II., Book 205, Eight Two-Part Songs, by various composers. Book 207, Eleven Old English Songs. 6d. each book.—Grade III., Book 174, Five Accompanied Trios, by various composers. 8d. Book 203, Six Two-Part Songs, by various composers. 8d. Book 206, Thirteen Unaccompanied Trios, by various composers. 6d.

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[Generally very interesting and suitable.]

MATHEMATICS.

Note on Kirkman's Schoolgirl Problem, vide *Question* 15956.

(Vide "*Educational Times*," *August*, 1909, *and earlier issues of this Journal.*)

By O. ECKENSTEIN.

I see that Mr. Henry E. Dudeney has discovered how I solved the cases of 69 and 93 girls; as in his last contribution he repeats, as new, some matter which has already appeared in the *Educational Times Reprint*, and, as his information is also incomplete in some respects, I send you a further contribution on the subject. In order to simplify matters, I will replace Mr. Dudeney's letters $a_1, b_1, c_1, a_2, b_2, c_2, \ldots$, by the numbers 1, 2, 3, 4, 5, 6, ...

A considerable part of the first paragraph of Mr. Dudeney's paper is expressed, less eloquently, by my statement that this method applies to *all* cases, with the solitary exception of 15. I may add that the "new pose exhibited" is not a new pose at all, as it has been used before.

The second paragraph at once follows from the solutions I gave. In each of them the solution is in two parts, and the cyclical arrangement described by Mr. Dudeney is evident on inspection.

In the next paragraph he then adopts the $18n$ classification, having previously used the $24n$ classification only (my statement was "all cases of the form $18n+3$"). He then gives his arrangement of the triplets, all differences of the form $3p$ being used in the first part, as in the solutions I gave. Here, however, an important point arises, which he does not mention and which is not apparent from either of my solutions: in cases of the forms $18n+3$ and $18n+15$ these differences *must* be used in the first part of the solution; in cases of the form $18n+9$ they *may* be used in that part, but they may also be used in the second part; and if we use one of them, namely $6n+3$, in the second part, and introduce the slight modifications necessary, we obtain a simple and regular method for the $18n+9$ series, in which the arrangement of the triplets is as regular as in my 93 ($18n+3$) solution. As an instance, I will take the case of 45 girls.

45 *girls.*—Call the girls 1, 2, 3, ..., 45. The first day's arrangement is:—

1 4 10	16 19 25	31 34 40
11 12 30	26 27 45	41 42 15
8 13 29	23 28 44	38 43 14
6 18 20	21 33 35	36 3 5
2 37 24	17 7 39	32 22 9

The 2nd, 3rd, ..., 15th day's arrangement is obtained by adding 1, 2, ..., 14 to the first day's numbers. When the sum obtained exceeds 45, subtract 45 from that sum.

The first triplets on the 16th, 17th, ..., 21st day are:

1 5 12	2 6 13	3 7 14
1 9 26	2 10 27	3 11 28

The 2nd, 3rd, ..., 15th triplet on each day is obtained by adding 3, 6, ..., 42 to the first triplet of that day. When the sum obtained exceeds 45, subtract 45 from that sum.

The last day's arrangement is:

1 16 31, 2 17 32, ..., 15 30 45.

The method used is comparatively simple; all cases of the form $18n+9$, except 9, can be solved in this way.

This solution, like my 93 solution, is a regular one; as few different sets of differences as possible are used.

My 69 solution was an irregular one, and so is Mr. Dudeney's. I gave an irregular one intentionally; firstly for the sake of variety, and secondly because the method is the only one generally applicable, without modification (15 always excepted). But it is also possible, but also not simple, to obtain regular solutions in the case of the $18n+15$ series. As an instance, I will take the case of 33 girls.

33 *girls.*—Call the girls 1, 2, ..., 33. The first day's arrangement is:—

1 13 19	23 11 5	3 15 21
2 4 7	12 14 17	28 30 33
6 16 25	10 20 29	8 18 27
24 31 32		
9 22 26		

The 2nd, 3rd, ..., 11th day's arrangement is obtained by adding 3, 6, ..., 30 to the first day's numbers; subtracting 33 if that sum is exceeded.

The first triplets on the other 5 days are:—

1 8 9	2 9 10
1 14 18	2 15 19
1 12 23	

The subsequent triplets are obtained by adding 3, 6, ..., 30; subtracting 33 if that sum is exceeded. Here the sets of differences used are 6 12 15, 2 3 5, 9 10 14, 1 7 8, 4 13 16, 11 11 11, *i.e.*, 6 sets, the minimum number possible.

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All cases of the form $18n+15$, except 15, can be solved in this way.

In a former contribution, Mr. Dudeney states that a general method for solving cases of the form $24n+15$ has yet to be discovered. There are a number of methods, some simple and others complicated, for attacking cases of the form $12n+3$. I select some typical instances. Such methods can be divided into two classes: in one the sets of differences containing odd numbers (excluding $6n+1$) are of the form 1 3 2 or 1 3 4; in the other they are of the form 1 1 2. I will call the former scalene, and the latter isosceles solutions. In the solutions which follow, I give the first day's arrangement; the 2nd, 3rd, ... day's are obtained by adding 2, 4, ... to the first day's. If the sum obtained exceeds $12n+2$, subtract $12n+2$ from that sum. The girls are called k, 1, 2, ..., $12n+2$.

SCALENE SOLUTIONS.

123 GIRLS.

k 1 62	15 109 34	29 95 118
61 63 64	47 77 92	33 91 120
3 121 58	17 107 94	31 93 2
59 65 56	45 79 96	70 44 72
5 119 54	19 105 26	46 98 42
57 67 52	43 81 24	30 12 22
7 117 74	21 103 102	4 40 20
55 69 48	41 83 104	68 18 100
9 115 78	23 101 106	50 28 108
53 71 80	39 85 16	38 116 32
11 113 82	25 99 14	110 76 122
51 73 84	37 87 112	36 90 60
13 111 86	27 97 10	114 6 66
49 75 88	35 89 8	

39 GIRLS.

k 1 20	15 25 30	11 29 38
19 21 22	7 33 32	26 10 24
3 37 16	13 27 34	8 2 12
17 23 14	9 31 4	6 18 36
5 35 28		

All cases of the form $12n+3$ can be solved in this way. The method is very simple in most cases; it applies, without any modification whatever, to all except 27, 51, 111, ... If suitably modified, it applies to these cases also, but then becomes much more complicated. An instance is given below.

ISOSCELES SOLUTIONS.

135 GIRLS.

k 1 68	47 93 70	79 23 118
3 5 4	51 101 76	45 89 134
9 17 80	67 133 100	43 85 64
33 65 116	131 127 62	35 69 52
129 123 126	119 103 44	66 10 128
111 87 32	71 7 106	72 50 82
39 77 58	13 25 86	60 104 40
19 37 28	49 97 6	84 130 124
73 11 42	59 117 88	36 78 90
21 41 98	99 63 14	132 48 24
81 27 54	125 115 120	74 108 22
53 105 12	95 55 8	56 122 26
75 15 112	109 83 96	92 94 18
29 57 110	31 61 46	20 16 34
113 91 102	121 107 114	30 38 2

99 GIRLS.

k 1 50	89 69 30	15 43 78
3 7 54	79 39 10	29 85 8
5 13 58	59 77 68	57 71 64
9 25 66	19 55 86	48 88 14
17 49 82	37 11 24	46 28 76
33 97 16	73 21 96	42 6 4
65 95 80	47 41 44	34 60 56
31 91 12	93 81 38	18 70 62
61 83 72	87 63 26	84 90 74
23 67 94	75 27 2	20 32 98
45 35 40	51 53 52	36 22 92

All cases of the form $12n+3$ can be solved in this way. The method is simple in most cases. It has this peculiarity, that in nearly every case some modification is necessary; as shown in the above two cases. The modification varies with the number and magnitude of the odd-number series obtained. Thus, with 135 girls we have one series only; but with 99 we have four series: two of 21 numbers each and two of 3 numbers each. In certain cases, especially those of the form $60n-9$, the modifications required are so many and so complicated as to give the appearance of a new method. An instance is given below.

SCALENE SOLUTION.—27 GIRLS.

k 1 14	17 23 8	5 19 26
9 11 12	13 21 18	2 4 10
3 7 22	15 25 24	6 16 20

ISOSCELES SOLUTION.—51 GIRLS.

k 1 26	23 45 34	31 35 8
41 43 42	9 33 46	32 48 50
13 19 16	27 47 12	14 18 24
39 49 44	5 21 38	2 22 30
3 17 10	25 37 6	4 28 40
11 29 20	7 15 36	

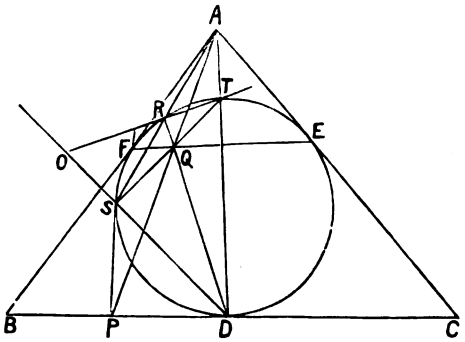
In conclusion, I would like to state that we (Mr. L. A. Legros and myself) do not claim that all, or any, of the methods used in the solutions I have given are wholly original; but in each case there is at least one feature of interest not noted in those hitherto published. And for most of them only a very elementary knowledge of mathematics is required.

[Mr. Dudeney sends us the following note as we are going to press:—"At the time of writing my article for the August number of the *Educational Times* I had, unfortunately, not seen any of the matter previously communicated by Mr. Eckenstein, nor have I had the pleasure of reading it even now. This I regret; but it should have been obvious that I could not have seen his solutions. Towards the end of the article (for *Reprint*) I wrote: 'The only cases under 100 for which arrangements have *now not been published* . . . are 57, 75, and 93.' He has apparently seen the complete article or he would not know that I had solved 93, as he states. Of course, the entirely original matter that I gave in my first two articles, with its indication of types and methods of solution, would make the discovery of mere arrangements, for the cases I mentioned, comparatively easy, and my pose for the case of 21 girls would naturally lead other investigators, as it led me, to substitute the $18q$ for the $24p$ classification that I had previously discovered. Mr. Eckenstein does not state where the 'new pose' has been published before; but the important point was not its novelty, but the discovery that it is general for all values of $6m+3$. Consideration of space has prevented my discussing the all-important but difficult point of the method of grouping the differences and applying them to the numbers or suffixes, and Mr. Eckenstein is also silent on the point. But I will just remark that, by his method for 111 girls (a case of the form $60n-9$), he finds that 'the modifications required are so many and so complicated,' whereas by my general method it is so simple, direct, and free from all modifications, that it can be written out in two minutes without any previous calculation or preparation, and without any trials or empirical steps."]

16675. (W. J. DOBBS, M.A.)—A circle is inscribed to a triangle ABC, touching its sides at D, E, F. P is any point in the side BC, and AP meets FE at Q. DQ meets the circle at R, and AR meets the circle at S. Prove that PS is the tangent at S.

Solution by W. RIGBY, M.A., *and* Rev. WILLIAM ANDERSON, M.A.

It is a well known theorem (*a*) that the harmonic triangle of a quadrangle inscribed in a circle is self-conjugate for the circle.



Join AD and let it cut the circle in T; then EF, the polar of A, passes through Q, which must be the intersection of DR and ST ... (*a*).

Let RT, SD meet in O, then from (*a*) PQ is the polar of O. Therefore the polar of P passes through O.

The polar of P also passes through D, since PD is a tangent to the circle. Therefore OD is the polar of P. Therefore PS is the tangent from P to the circle.

11509. (J. H. GRACE, M.A.)—Having given three circles A, B, and C, (1) draw a circle which shall touch A, cut B orthogonally, and bisect the circumference of C, and (2) find how many circles can be so drawn.

Solutions (I.) *by* F. E. RELTON; (II.) *by* W. L. MARR, M.A., B.Sc.; (III.) *by* R. J. DALLAS.

(I.) Let P be the centre of any circle which cuts B orthogonally and bisects the circumference of C. Then, if r_2, r_3 be the radii of B, C, respectively, $PB^2-r_2^2=PC^2+r_3^2$ or $PB^2-PC^2=r_2^2+r_3^2$, so that the locus of P is a straight line (PD say) perpendicular to BC. Take a

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system of circles co-axal with B, the axis being PD. Let E, F be the limiting points. The required circle passes through E, F and touches A. As two such circles can be drawn there are two solutions.

(II.) The locus of the centres of circles which cut B orthogonally and bisect the circumference of C is a straight line (L). With the centre of B as origin of inversion, describe a circle the inverse of A, the radius of B being the radius of inversion. Call this last circle D. The problem then resolves itself into finding a circle whose centre is in L and which touches A and D.

(III.) If c is radius of C, r that of sought circle, d distance between centres, we have $r^2-c^2=d^2$. That is $r^2+(ci)^2=d^2$, hence sought circle cuts B and a circle concentric with C, and radius ci orthogonally; thus it belongs to a coaxal system. Let X, Y be the real common points of intersection of the system; let C_1 be centre of C, and let B cut line of centres in B_1B_2. Then, drawing CO at right angles to line of centres at C_1 and $= c_1$, we must have XOY a right angle, that $C_1X.C_1Y$ may $= -c^2$. Also X, Y divide B_1B_2 harmonically. The problem is thus reduced into finding the common pair of two superposed involutions. In fact the solution is: join OB_1, OB_2 and bisect B_1OB_2 internally and externally by OX_1, OY_1. Having found X and Y, we describe circles through them to touch A. There are two of them.

11352. (G. S. Carr, M.A.)—If a watch spring, normally straight, be made circular by soldering together the ends, and then compressed at the extremities of a diameter AA′ by forces P, P′, the length of the transverse diameter BB′ thus becoming $2b$, show that the curvatures at A and B respectively (putting E for the elasticity) will be

$$(Pb/2E)\mp 1/b.$$

Solution by W. L. Marr, M.A., B.Sc.

For equilibrium the forces P and P′ must be equal.

Let C be the radius of curvature at S, C_1 at A, C_2 at B.

The couples keeping the arc AS in equilibrium are Px due to the impressed force P and those due to the curvatures at A and S.

$$E/C_1+Px=E/C \ldots (1).$$

When $x=b$,

$$E/C_1+Pb=E/C_2 \ldots (2).$$

$$1/C=d/dx\,(dy/ds),$$

$$E/C_1+Px=E\,d/dx\,(dy/ds) \ldots (1).$$

Integrating $E/C_1\,x+\frac{1}{2}Px^2=E\,dy/ds$,

when $x=b$, $dy/ds=1$;

therefore $E/C_1\,b+\frac{1}{2}Pb^2=E$ ..... (3);

therefore $E/C_1+\frac{1}{2}Pb=E/b$; therefore $E/C_2=E/b+\frac{1}{2}Pb$.

The curvature at A and B is thus given by $1/b\pm Pb/2E$, which agrees numerically with the formula given.

Note by the Proposer.—Mr. Marr's is the better way of presenting the formula; only that I should write $\mp$ since the minus sign belongs to A and the plus to B. If P increases until it becomes $= 2E/b^2$, the curvature at A vanishes and after that changes sign, the curve becoming re-entrant.

16658. (W. F. Beard, M.A.)—A conic circumscribed about a triangle passes through its centroid. Show that the triangle formed by joining the mid-points of the sides is self-conjugate to the conic.

Solution by A. H. S. Gillson.

Take the given triangle as triangle of reference.

Then the equation of the conic circumscribing the triangle of reference is, in trilinear coordinates,

$$f.\beta\gamma+g.\gamma\alpha+h.\alpha\beta=0 \ldots (1).$$

Also, since the centroid $(2\Delta/3a,\ 2\Delta/3b,\ 2\Delta/3c)$ is on the conic,

$$af+bg+ch=0 \ldots (2).$$

The coordinates of the middle point D of the side BC are $(0,\ \frac{1}{2}a\sin C,\ \frac{1}{2}a\sin B)$. Hence the polar of D with respect to (1) is

$$\alpha(hc+gb)+\beta fb+\gamma fc=0,$$

which, by the condition (2), reduces to

$$a\alpha=b\beta+c\gamma \ldots (3).$$

This line clearly passes through the middle points E and F of the sides CA, AB. Hence the triangle DEF is self-polar for the conic (1), (2).

The following solution is due to the Proposer:—

Let ABC be the triangle, A′, B′, C′ the mid-points of its sides, G the centroid.

Let AGA′ meet B′C′ at D.

Then A′G/GD = A′A/DA.

Therefore (A′D, GA) is harmonic. Therefore the polar of A′ to a conic through ABCG passes through D.

Also (A′ ∞ BC) is harmonic. Therefore the polar of A′ is parallel to BC.

Therefore B′C′ is the polar of A′. Similarly for B′, C′.

Thus A′B′C′ is a self-conjugate triangle.

16679. (R. Chartres.)—Evaluate

$$\sum_1^\infty \frac{[1.3.5\ldots(2n-1)]^2}{(2n+2)!}.$$

Solution by T. W. Chaundy.

$$(1-x^2)^{\frac{1}{2}}=1-\tfrac{1}{2}x^2-\frac{1.1}{2.4}x^4-\frac{1.1.3}{2.4.6}x^6-\ldots;$$

i.e.,
$$1-(1-x^2)^{\frac{1}{2}}=\tfrac{1}{2}x^2+\frac{1^2.3}{4!}x^4+\frac{1^2.3^2.5}{6!}x^6+\ldots;$$

i.e.,
$$\int_0^1\frac{1-(1-x^2)^{\frac{1}{2}}}{x^2}\,dx=\tfrac{1}{2}+\frac{1^2}{4!}+\frac{1^2.3^2}{6!}+\ldots$$
$$=\tfrac{1}{2}+\sum_1^\infty\frac{[1.3\ldots(2n-1)]^2}{(2n+2)!};$$

i.e.,
$$\sum_1^\infty\frac{[1.3\ldots(2n-1)]^2}{(2n+2)!}=-\tfrac{1}{2}+\int_0^1\frac{1-\sqrt{(1-x^2)}}{x^2}\,dx \qquad [x=\sin\theta]$$
$$=-\tfrac{1}{2}+\int_0^{\frac{1}{2}\pi}\frac{1-\cos\theta}{\sin^2\theta}\cos\theta.d\theta$$
$$=-\tfrac{1}{2}+\int_0^{\frac{1}{2}\pi}\frac{2\cos^2\theta-1}{\cos^2\theta}\,d\theta$$
$$=-\tfrac{1}{2}+\int_0^{\frac{1}{2}\pi}(2-\sec^2\theta)\,d\theta$$
$$=-\tfrac{1}{2}+\tfrac{1}{2}\pi-1=\tfrac{1}{2}(\pi-3).$$

The Proposer's solution is as follows:—

Integrating $\int_0^1\sin^{-1}x\,dx$, by parts, and also by expanding,

$$\tfrac{1}{2}\pi-1=\int_0^1\left(x+\tfrac{1}{2}.\frac{x^3}{3}+\frac{1.3}{2.4}.\frac{x^5}{5}+\ldots\right)dx.$$

Therefore
$$\sum_1^\infty\frac{[1.3.5\ldots(2n-1)]^2}{(2n+2)!}=\tfrac{1}{4}(\pi-3).$$

16684. (R. F. Davis, M.A.)—Solve the equations

$$abc\,(y^2+z^2-x^2)+(b^2+c^2-a^2)(ayz+bzx+cxy)=2bcP,$$
$$abc\,(z^2+x^2-y^2)+(c^2+a^2-b^2)(\ldots\ldots\ldots\ldots)=2caQ,$$
$$abc\,(x^2+y^2-z^2)+(a^2+b^2-c^2)(\ldots\ldots\ldots\ldots)=2abR.$$

Solution by H. J. Woodall, A.R.C.S.

Adding the first two equations, dividing by zc, and factorizing, we get

$$(az+cx)(bz+cy)=bP+aQ.$$

Similarly, from (1) and (3),

$$(bx+ay)(bz+cy)=cP+aR;$$

and, from (2) and (3), $(bx+ay)(cx+az)=cQ+bR$,

whence
$$cx+az=\frac{\sqrt{[(bP+aQ)(cP+aR)(cQ+bR)]}}{(cP+aR)},$$
$$cy+bz=\frac{\sqrt{[(bP+aQ)(cP+aR)(cQ+bR)]}}{(cQ+bR)},$$
and
$$bx+ay=\frac{\sqrt{[(bP+aQ)(cP+aR)(cQ+bR)]}}{(bP+aQ)};$$
$$x=\frac{\sqrt{[(bP+aQ)(cP+aR)(cQ+bR)]}}{2bc}\left(\frac{b}{cP+aR}+\frac{c}{bP+aQ}-\frac{a}{cQ+bR}\right),$$
$$y=\&c.,$$
$$z=\&c.$$

8064. (J. P. Johnston, B.A.)—If a cone of the second degree whose vertex lies on a fixed plane (M) intersects a quadric (U) in a pair of planes, one of which (L) is fixed, the envelope of the other is a cubic of the form $L(U+kM^2)=0$.

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Solution by A. M. NESBITT, M.A.

Refer the quadric to a self conjugate tetrahedron having one of its faces in the plane M; there will be no loss of generality if we take for its equation $x^2+y^2+z^2=w^2$, $w=0$ being the equation to M. Now in the particular case where $w\equiv c$ and the other three faces of the tetrahedron are at right angles, U becomes a sphere, and the cone becomes a cylinder whose common sections with U are *equal* circles. Hence, the section with L being a fixed circle, the other section envelopes a concentric sphere touching L (I am, however, far from clear that the plane L can be said to belong to the envelope), and this sphere has an equation of the form $U+kc^2=0$. Consequently, when M is no longer the plane at ∞ and the other faces are not mutually at right angles, the envelope will be of the same form $U+kM^2=0$.

Note.—The envelope of a variable chord of a circle which is equal to a fixed chord L is a concentric circle touching L; but L is itself no part of the envelope; and the case that is treated of in my solution above seems to me analogous.

QUESTIONS FOR SOLUTION.

16686. (Professor H. LANGHORNE ORCHARD, M.A., B.Sc. Revised; *vide Educational Times*, July 1909.)—Find the envelope of a sphere of unit radius which moves so that its centre is always in a fixed plane. In Questions 16700, line 3, and 16704, line 1 (*vide Educational Times*, August 1909), read ${}_{n+1}C_4.B_2.3^{n-3}$ and s respectively.

16714. (Professor SANJÂNA, M.A.)—Two knights are placed at random on a square chess-board of n^2 squares; prove that the chance that either can take the other is $8(n-2)/n^2(n+1)$; and solve the question when the move of each piece consists of r squares parallel to one side of the board, and s squares parallel to the other.

16715. (PULINBIHARI DAS, M.A.)—Prove that

$$\int_0^a \frac{\operatorname{cosech}(\frac{1}{2}\pi\sqrt{x})}{1+x}\,dx=\pi.$$

16716. (Professor NEUBERG.)—Trouver l'équation différentielle des cissoïdes de Dioclès qui ont même point de rebroussement.

16717. (S. NARAYANA AIYAR.)—$a, b, c, d, \ldots$, being n quantities, establish the following identities where ρ_{ab} denotes $\sqrt{(a^2+b^2-2ab\cos\theta)}$, and ϕ_{ab} denotes $\tan^{-1}(a\sin\theta)/(a\cos\theta-b)$, and where the summation extends to all the n quantities,

(1) $$\Sigma\frac{\sin(x+a-b)\sin(x+a-c)\sin(x+a-d)\ldots\text{ to }n\text{ factors}}{\sin(a-b)\sin(a-c)\sin(a-d)\ldots\text{ to }n\text{ factors}}\equiv\frac{\sin nx}{\sin x},$$

(2) $$\Sigma\frac{\rho_{ab}\rho_{ac}\rho_{ad}\ldots\text{ to }n\text{ factors}}{(a-b)(a-c)(a-d)\ldots\text{ to }n\text{ factors}}\cos(\phi_{ab}+\phi_{ac}+\phi_{ad}+\ldots\text{to }n\text{ terms})\equiv\Sigma_{r=0}^{r=n-1}\frac{\cos}{\sin}r\theta.$$

16718. (*Communicated by* Professor K. C. SIH.)—Sum the series

$$\frac{1+2+3+4}{1.2.3.4}+\frac{5+6+7+8}{5.6.7.8}+\frac{9+10+11+12}{9.10.11.12}+\ldots\text{ ad inf.}$$

16719. (Professor SANJÂNA, M.A.)—Show that numbers of the form $x^4-x^2y^2+y^4$ can be resolved into two algebraic factors for a multiply infinite number of corresponding values of x and y. Hence factorise

$$120^6+119^6,\quad 193^6+141^6,\quad 243^6+242^6,\quad 447^6+445^6.$$

16720. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Solve (in integers) $N_1N_2N_3=\square$, where $N_r=x_r^4+y_r^4>1$. Give the lowest solution, and also one with $N_1N_2N_3>10^{40}$, both completely resolved into prime factors.

16721. (Professor E. B. ESCOTT.)—Find two equations of the fourth degree with all their roots rational, each equation having a double root (no roots common to the two equations) and having the first four terms alike in the two equations.

16722. (R. J. DALLAS.)—A sheaf of planes through a fixed point O cut two pairs of non-intersecting lines (aa'), (bb') in AA', BB', and AA', BB' meet in P. To show that the locus of P is a cubic surface, and to examine the break-up of the surface when the lines lie on a quadric.

16723. (R. CHARTRES.)—Show how *naturally* a sphere and the corresponding cone make up the circumscribing cylinder, and then deduce their volumes.

16724. (C. E. YOUNGMAN, M.A.)—From any point P on a cardioid, let chords PSQ, PRQ' be drawn, one through the cusp S, the other to be tangent at R; then QQ' is the chord of curvature at Q.

16725. (S. NARAYANAN, B.A., L.T.)—Show that the focus of an inscribed parabola having the orthocentre for the foot of the directrix lies at an intersection of the circum-circle with the cubic

$$\Sigma\beta\gamma\tan A\,[\beta\sin B-\gamma\sin C+\alpha\sin(B-C)]=0.$$

16726. (M. T. NARANIENGAR, M.A.)—Given a chord PQ of a conic, and a point R on it, find, geometrically, a point O on the conic such that OR shall be equally inclined to OP and OQ. Discuss the number of solutions.

16727. (H. L. TRACHTENBERG, B.A.)—Prove that the centres of a four-point system of conics lie on a line, provided that two of the four points are at infinity.

16728. (Professor NANSON.)—The director circles of all conics harmonically inscribed in three given conics have a common orthogonal circle.

16729. (R. F. DAVIS, M.A.)—Along the perpendiculars AX, BY, CZ are set off distances AL, BM, CN respectively equal to the trilinear coordinates of any point P on the circum-circle of a given triangle ABC, attention being paid to sign. Prove that L, M, N are collinear. What is the geometrical significance of the line LMN?

16730. (W. F. BEARD, M.A.)—Z is a fixed point in a fixed straight line XY, and D is any other point not in XY. Two circles are drawn to touch XY and to touch ZD at D. The tangents to these circles from any point A on ZD produced meet XY at B, C. Prove that the locus of the in-centre of the triangle ABC is a straight line.

16731. (W. J. GREENSTREET, M.A.)—The sides and diagonals of a quadrilateral being a, b, c, d, e, f, show that

$$ac\cos(a,b)+bd\cos(c,d)+ef\cos(e,f)=0,$$

where (a, b) is the angle between a and b.

16732. (W. GALLATLY, M.A.)—Resolve

$$bc(b+c)(a^2+ac+c^2-b^2)(a^2+ab+b^2-c^2)+\ldots+\ldots$$

into seven factors.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

11568. (J. J. WALKER, F.R.S.)—A Boyle and Marriotte tube might obviously be employed to find the barometric reading (approximately). Discuss the possible error in the result, and determine whether a considerable or moderate condensation of air is preferable.

11757. (Professor CROFTON, F.R.S.)—A heavy circular hoop (radius = 1) is jointed at three points A, B, C. The line AB is horizontal, and the joints A, B are fixed points, on which the hoop rests in a vertical plane. Find the direction of the strain at C. If ψ be the inclination of this strain to the horizon, θ the arc of the hoop from C to the highest point, show that if the points A, B are taken continually nearer and nearer to the lowest point, the inclination ψ tends to the limiting value $\tan\psi=\theta/(1+\theta\tan\frac{1}{2}\theta)$; but that when they ultimately coincide at the lowest point, the direction of the strain is indeterminate.

11768. (The late H. R. GREER, B.A.)—Prove that any algebraical equation connecting x and Δ (the symbol of finite difference) becomes an algebraic identity when we substitute -1 for Δ. Of what general transformation, allowable with regard to these symbols, is this a particular case?

11887. (Professor SYLVESTER.)—Find the least circle which will contain a given system of points in a plane; also the least sphere which will contain a given system of points in space.

11971. (Professor BESSO.)—Éliminer x, y, z entre les équations

$$yz(1-2x)=\alpha^2(1-x)^2,\quad zx(1-2y)=\beta^2(1-y)^2,$$
$$xy(1-2z)=\gamma^2(1-z)^2,\quad x+y+z=1.$$

12074. (E. WHITE, B.A.)—If a number N be expressed in any scale of notation, radix r (say), and a new number be formed from it by adding to it the sum of its digits, and this number be treated in the same way, and so on, then no number of the series will be a multiple of $r-1$, unless N itself be a multiple, or unless $r-1$ equal some power of 2.

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The Educational Times.

Education in Russia.

In the sober garb of the "Special Reports on Educational Subjects" there has just been issued, after long delays, by the Board of Education a most elaborate monograph on Education in Russia by the late Mr. Thomas Darlington—a volume of nearly six hundred solid pages (Cd. 4812, 2s. 5d., Wyman). The work has been manifestly a labour of love, pursued tenaciously through interruptions and difficulties, and marked from beginning to end by genuine sympathy and clear insight. Mr. Darlington steadily regarded Russian education as an aspect of Russian culture; otherwise he could not have hoped to render his statement complete or even intelligible. While the principle holds generally, it applies in an especial degree to a treatise on Russian education for Western students, for the historical background in Russia forbids the assumptions that would be admissible in the case of any other great European country: Russia's past is very different from the past of Western Europe, and "no civilized nation is more widely sundered from Russia by history and national temperament, as well as by social and political ideals, than our own." Accordingly, Mr. Darlington occupies a quarter of his space in sketching the history of Russian education. He then presents a general survey of the present position and organization of education in Russia; discusses in detail successively Primary, Secondary, University, Technical, and Commercial instruction; and concludes with an historical summary and general considerations. At all points one is impressed with the industry, care, and level judgment of the writer.

The historical sketch is an extraordinary miscellany of ups and downs, with eventual advance and expansion. The necessity for it, with applications, is thus shown by Mr. Darlington:

> The actual position of Russian education cannot be understood without some knowledge of its origins and of the conditions which have determined its development up to the present time; because only in proportion as these are realized does it become possible to apply a correct standard of judgment to the existing state of things. For example, the backward condition of Russian primary education, with its consequence, a low average level of culture, is explicable only as the result of social and economic conditions which, though corresponding to the medieval stage of Western civilization, lasted in Russia until the abolition of serfdom forty years ago. On the other hand, the recent advances made in professional and technical instruction stand in direct relation with the industrial developments of the last generation, which in their turn were made possible only by the liberation of labour from the restraints imposed upon it by the existence of serfdom. The present-day problems of higher education in Russia are unintelligible unless studied with reference to the vicissitudes through which the principle of University autonomy has passed in the course of the last century; whilst the secondary schools of general education have been affected during the same period by a variety of causes intimately connected with the social and political history of the time.

It is an absorbing story of pitiful interest, yet eminently instructive and inspiring great hopes for the future.

Though all education is under State control, the Ministry of Public Instruction is but one of many Government Departments concerned in educational administration. The Ministry of Public Instruction controls institutions of general education; schools and colleges with specialized curricula are under the supervision of other Departments of State specially interested in their efficiency. "Thus, the Universities, gymnasia, progymnasia, real-schools, and an important part of the primary schools are administered by the Ministry of Public Instruction; but the theological academies and seminaries are under the control of the Holy Synod, commercial schools under that of the Ministry of Finance, agricultural schools under that of the Ministry of Agriculture and Imperial Domains, certain engineering institutes are maintained by the Ministry of Ways of Communication, and so on." And even to this general rule there are important exceptions: for example, while the great majority of intermediate and primary technical and trade schools are also under the Ministry of Public Instruction, the primary schools under the Holy Synod outnumber those belonging to the Ministry of Public Instruction. Moreover, the various institutions are not necessarily supported, in whole or in part, by the State:

> Certain kinds of schools and colleges—as, for example, the Universities and most of the classical gymnasia—are, in fact, so supported; others, for example, some of the higher technical colleges, real-schools, and primary schools are maintained partly by State subventions and partly by funds locally contributed; others again, including nearly half of the primary schools and some of the more important places of technical and commercial instruction, depend almost wholly on local funds, with little or no aid from the Imperial Treasury; and, finally, many are private-venture schools pure and simple. These distinctions, however, make practically no difference to the kind and degree of control exercised by the State.

Even private schools "are officially recognized as existing in order to co-operate with the views of the Government, and

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the English idea of a school as having rights in the shape of freedom from Government inspection and the like, which it can barter away to the State in exchange for Treasury grants or other privileges, is one which is entirely foreign to Russian habits of thought."

This State control, unlimited, arbitrary, and indisputable, accounts for curious contrasts. When national education became necessary—not because the people wanted education, but because the bureaucracy had to supply itself with administrative officers throughout the official grades—the State took matters into its own hands, and summarily set aside the educational control of the Church, at any rate in the higher education; whereas in Western countries the approach to a national system has been slow and toilsome and imperfect. More recently, while the Church has been fighting a desperate and losing battle for the control of education in Western countries, the Church in Russia, without any desire on its own part, has been drawn steadily into a subordinate control of education, especially of primary education, by the pressure of the State, which finds the Church more in sympathy with its policy than the secular local bodies, zemstvos, and municipalities. Again, while classical studies have been fighting for dear life, and real studies have been pushing to the front, in the West, the classical curriculum in Russia has invaded, though not without much criticism and opposition, the ground traditionally held by the real curriculum. Such changes as take place are essentially governed by the bureaucratic conceptions of the safety and welfare of the State; and the different history of political and social conditions is the key to the contrast with the other countries of Europe.

It is impossible to enter upon details of any of the divisions of the educational hierarchy, and it is the less necessary because presumably all educationists will study the "Report" for themselves. We will refer, however, to the great institution of "Chin" (*chēn*, order, grade, regulation, &c.). "Chin" denotes the hierarchy of the upper classes, not according to birth or hereditary position, but according to position in the public service. It was invented by Peter the Great, who had the notion that the Civil Service should be organized on the same basis of personal rank as the Military Service. Now personal nobility belongs to all the fourteen classes of "Chin," hereditary nobility being confined to the four highest classes; and every teacher has his place in the system.

The Rector of a University or the Director of a higher technical college is placed in Class IV; a University Inspector or an ordinary Professor in Class V; an extraordinary Professor in Class VI; a Lector in Class VII. To the staff of a secondary school are assigned ranks in each case a grade lower than those of the corresponding positions in a University, the Director being placed in the fifth class, the inspector in the sixth, the teachers in the seventh. Persons belonging to a particular class in virtue of their official position may, nevertheless, within certain limits defined by statute, obtain promotion to a higher class while still retaining the same office. Thus it happens that one finds a Director of a secondary school or a District Inspector with the title of Actual State Councillor and the rank of a major-general (Class IV), or a University Professor with the title of Privy Councillor and the rank of a general of division (Class III), in each of these cases the official in question being addressed as "Your Excellency."

There is another point of contact with this hierarchy of ranks which is of even greater importance. In Russia education is the one means of access to the public service in all its branches.

The class in which a public servant commences his official career depends entirely upon the kind and degree of previous education which he has received. The certificate of maturity of the gymnasium gives the right to the fourteenth class; the ordinary diploma of the University gives admission to the tenth, the degree of Magister to the eighth, the Doctorate to the seventh. Those who complete the course of the Alexander Lyceum leave with *chin* of the twelfth, tenth, or ninth class according to the way in which they have acquitted themselves; and similar privileges belong to other institutions of the same kind. It is the fact that *chin* is thus made dependent upon education which makes it true to assert that in Russia education is the one indispensable condition of admission to the ranks of the nobility, whether personal or hereditary.

Those of us that hope for the inclusion of teachers in the Civil Service will be interested in the chances of ranking as a Major-General and being addressed as "Your Excellency."

NOTES.

THE meeting of the British Association at Winnipeg, the capital of the great wheat province of Manitoba, half way between Montreal and Vancouver and over 1,400 miles distant from both, again invested the proceedings with a certain Imperial air. Canada was to the front: the President spoke in flattering terms of Canadian science, Canadian Universities, and Canadian students; the Presidents of sections vied with the President in chief; and the President of the Education Section actually annexed a considerable slice of the Dominion, planting a new wing of Bradfield in a new land. Sir Joseph Thomson has had special opportunities of appreciating colonial and foreign students, who have flocked to his laboratory from the ends of the earth, and his approval sets a great seal to the educational institutions and the countries of their training. We are not so sure of his ground when he recommended an interchange of University students, but we note that he indicated a certain limitation. "He was quite sure that many English students—especially those destined for public life—could have no more valuable experience than to spend a year in one or other of the Canadian Universities: he could think of nothing more likely to lead to a better understanding of the feelings, the sympathies, and, what was not less important, the prejudices of one country by another, than by the youths of those countries spending a part of their student life together." There can be no doubt of that; only these things do not yet figure in the Tripos examinations, and the mutual recognition of examinations, residence, and so forth, is still in the future of University developments. Meantime, the great lesson from the other side of the Atlantic is the splendid (and paying) generosity of the people in the maintenance and extension of their educational institutions. As for the technical element of the President's address, no representative of British science could have been more competent to handle the astonishing developments of physics in recent years.

IN the Education Section Dr. Gray represented, with ability and dignity, the more progressive educationists of the old country. His note was Imperial throughout. It rang out loud and clear, reverberating "on the banks of the Isis and the Cam," and challenging the warders on the moss-grown walls of the "pre-Reformation" citadels. If it is not the whole duty of the secondary schools to equip youths to

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take a leading part in the life of the Empire beyond the seas, it is at any rate part of their duty. It is the ancient Universities that block the way: their entrance demands have prevented the secondary schools from widening their curriculum with the development of new spheres of knowledge and enterprise. There is something in the indictment; but is there not something on the other side? Is it not in the scholarships that the gravamen lies? And, even on the score of scholarships, have not the Universities advanced a good few steps to meet the claims of modern subjects? Moreover, if "the results on the lower rungs of the educational ladder have been lamentable," is it quite fair to lay the blame at the door of the Universities? What have the lower rungs to do with the Universities? Can the schools not dispose the studies of the lower rungs just as they think fit? However, there is a grievance, and no inconsiderable one. And how does Dr. Gray propose to remedy it? Geography—especially historical geography—with special reference, of course, to the origin, growth, and progress of the British Empire; an elementary knowledge of science; a co-ordinated study of English language and English literature; only one ancient language (except for scholastic specialists); modern languages, mathematics, manual training: such is the proposed programme of the Imperial age. And a very good programme it is. We should not be surprised, however, if the ancient Universities entirely approved of it, and asked the secondary schools what difficulty they have in carrying it out. There is something to be said on the teaching of English language and literature and of geography in the schools; but that can wait.

Prof. Armstrong, presiding in the Chemical Section, based another querulous diatribe against the adventurousness of woman and the utter failure of the educational system upon chemical action of an extremely obscure nature. "The most disquieting feature of the times," he is reported to have said, "is the revolt of women against their womanhood, and their claims to be on an equality with man and to compete with men in every way." He seems to have argued himself pretty much into the views of another eminent connoisseur, who thought the proper business of women was "to suckle fools and chronicle small beer." Generally speaking, it is undeniable that "the evolution of the sexes has been on different lines, and different qualities have been developed in them"—probably enough by reason of profound germinal differences. But it is a long step from this admission to argue that women ought not to put their hand to any of the forms of daily work that are traditionally man's work. Given a swarming population, half of them women, and many of them dependent on their own exertions for a livelihood, many of them also having relatives dependent upon them, are the women not to stretch out their hands to whatever work they are physically and mentally competent to do? And, among other things, are they not to devote themselves to study, in whatever branch, if they find themselves able to satisfy thereby their mental and social needs? "It has been stated that in the United States of America the higher education of girls has been proved to sterilize them." Well, suppose this is the fact. Prof. Armstrong gives no facts to prove that the ladies have any regrets or that the welfare of the community has appreciably suffered. Choose whatever line you may, some faculty or other will fall more or less into disuse. The only sound element of Prof. Armstrong's reasoning is in the danger of overstrain; and that is common to man and woman and to all kinds of physical and mental exertion. He is crying in the wilderness. As for the "terrible failure" of popular elementary education, and other education to boot, there is nothing new in that. A less extravagant criticism would, we imagine, be more effective. We are reminded of George Macdonald's rural pessimist with the dismal and sweeping refrain:

Ye're a' wrang, and a' wrang,
An' a'thegither a' wrang;
There's nae a man aboot the toon
But's a'thegither a' wrang.

Not any of the questions discussed at Winnipeg has a more far-reaching importance than the problems of anthropology mooted by Prof. Myres. Unfortunately, we have as yet no adequate report of his address. The gist of it, however, is obvious. He wants a record of Nature's dealings with the European immigrants to Canada, just as he wants a record of the personal conditions of people at home. The Eugenist and the Mendelian are apt to fall out and to say hard things of each other; but it is plain that their different methods, if successfully followed, must issue in confirmation of the very same facts. Partly from lack of funds, partly from lack of investigators, both groups of inquirers are doomed to slow progress; but the results already achieved point indubitably to immense developments, which will make an unusual stir at the Local Government Board and in the field of education. Generalities of more or less accuracy will be brought within scientific definition, and new vistas of social development will be opened out. Allied with these inquiries is the anthropometric movement, which is already extending its scope from skull measurements and the colour of eyes and hair to the more delicate estimations of mental faculty. Prof. Myres justly acknowledged the pre-eminence of the United States Bureau of Ethnology as "the most systematic, the most copious, and the most scientific of the public agencies for the study of men as men." It is not creditable to our Government that this praise should necessarily be awarded by an Englishman to the Government of a foreign country. True, the ethnographical section of the last Indian census makes a very decent second; but then the cost of that does not come out of the Whitehall exchequer. It is high time that the Government should see their way to grant the modest assistance that English anthropologists recently requested; it is traditional, no doubt, but it is neither graceful nor economical, to leave the burden of a most valuable national inquiry upon the shoulders of private students.

Sir Philip Magnus, M.P., wrenched himself away from the absorbing interest of the Finance Bill to deliver the annual address to the Conference of the Union of Lancashire and Cheshire Institutes at Lancaster (September 23). He chose for his text—not for the first time—"the problem of

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all others that rivets one's attention on account of its intimate bearings on the future of this Empire—the kind of education that should be given in the schools in which more than nine-tenths of the population receive their training." Sir Philip sees, and admits that he sees, "certain plain ostensible advantages" that have resulted from the series of Education Acts since 1870—extremely important advantages too; but, without sacrificing such advantages, he wants to secure more. "Employers of labour, heads of commercial firms, and others complain that the lads who come into their works have been insufficiently and inadequately trained—are backward in the art of learning, irresponsive to suggestions, inert in habit, and lacking in resourcefulness and initiative" With full allowance for unreasonableness, this should not be a general complaint. The remedy, as heretofore, is—practical work.

I am glad (said Sir Philip) that the Board of Education are moving in this direction. But progress is necessarily slow, and even the Board of Education cannot act too far in advance of, and certainly not in direct opposition to, what they believe to be public opinion, and public opinion just now is largely influenced by social ideas and social conditions that do not make for self-reliance and self-dependence and the display of individual energy and thought. Our hope is in the teachers, and we may look for some improvement if only the Board of Education can be induced to make it a condition of State aid that the Training Colleges shall provide a more systematic scheme of practical instruction.

We cannot but think that Sir Philip is very much too distrustful of public opinion and of the force of individual energy. Anyhow, he has ample confidence in the teachers. "As a class," he said, "I do not know of any profession the members of which show a more genuine interest in their work, or discharge more conscientiously their arduous duties, than the men and women who spend their days in the task, than which none is more necessary or useful, of developing the intelligence and of helping to form the character of the future citizens of the Empire."

THE *Morning Post* says the Englishman "will spend money on anything rather than pay the best men he can get to teach his son." After quoting examples of salaries up and down the country, our contemporary proceeds:

What efficiency can Englishmen expect in secondary education run on lines like these? What man of ability will go through years of training—training is a neglected necessity to-day—in order that, after a life of self-devotion, he may be turned adrift to wait for an old-age pension—unless, indeed, he can make a living as a professional tenor or a grower of tomatoes? In Germany assistant masters in secondary schools begin their work with a minimum salary of £135, which in twenty-one years increases to £360. Besides this there is a house allowance of £70 a year. In Prussia a master may in addition receive a *Zulage*, or additional salary of £45, as a recognition of special ability. Compare this with the English average of £120, and the reason why English secondary education is so inefficient stands revealed. England needs good men, and they must be trained, and good men are not to be had, nor can they be trained, unless the English parent is prepared to pay. It is not only the inadequacy of the salary, however, which in England deters men of ability from becoming schoolmasters. Except in the case of a few well endowed public schools, there are no prospects. Once a schoolmaster, a man may say farewell to ambition. In Germany every schoolmaster has the possibility of a career. From the assistant masters are selected the Government Inspectors and the members of the Central Executive. This has another and most important result. The men who rise to control the national system of education are men who have spent most of their lives in teaching and have a practical understanding of the questions they administer. The result is one which compares well with the efforts of the experts who sit in the building in Whitehall. English education suffers most because those who direct it have no means of knowing whether their reforms are possible or not. They reason in the air and construct national systems of education in prefatory memoranda.

SUMMARY OF THE MONTH.

THE memorandum attached to the text of the Education (Physical Training) Bill introduced into the House of Lords (September 17) says: "The object of this Bill is to secure continuous physical training for the youth of both sexes up to the age of sixteen years, in order, as far as possible, to ensure for each young person the possession of sound and healthy vital organs, a deep, mobile chest, and the development of an evenly balanced muscular and nervous system, and thus to arrest the deplorable physical degeneration disclosed by the Report of the Inter-Departmental Committee on Physical Deterioration."

THE total number of candidates entered for the Cambridge Local Examinations held in July was 7,723, exclusive of 303 candidates examined at colonial centres. In the Senior Examination 965 boys and 1,307 girls passed, 87 boys and 23 girls being placed in the first class. Sufficient merit was shown by 487 boys and 313 girls to entitle them to exemption from one or both parts of the Previous Examination. Of the junior candidates, 1,451 boys and 1,184 girls passed, the numbers placed in the first class being 128 and 17 respectively. In the Preliminary Examination, 263 boys and 256 girls satisfied the Examiners.

SCHOLARSHIP awards to girl students are announced as results of the Cambridge Higher Local Examinations held in June, each scholarship being of the value of £50, and tenable for three years. The Clothworkers' Scholarship was won by G. E. Powers (City of London School) for Science and Mathematics, and the Winkworth Scholarship by K. Grant (St. Paul's Girls' School for Mathematics and Science). The scholarships offered for Classics last March were awarded to A. Yoxall (St. Paul's Girls' School), and the Mathilde Blind Scholarship to E. L. Perry (Elson House School, Leytonstone) for Modern Languages. The Gilchrist Fellowship for Professional Training was awarded to Miss D. H. G. Reeve, who obtained a First Class in the Medieval and Modern Languages Tripos in 1907, with distinction in German..

THE results of the examinations for Higher and Lower Certificates held by the Oxford and Cambridge Schools Examination Board in July are published. For Higher Certificates there were 2,358 candidates. Of these 527 girls were candidates for letters only. The number of Higher Certificates awarded was 963, and 446 letters were given to girls. In Latin there were 1,097 candidates, and 562 passed, 43 with distinction. In Greek there were 885 candidates, and 645 passed, 50 obtaining distinction. Of 1,502 candidates offering French, 774 passed, 71 with distinction. Of 240 examined in German, 167 passed, 26 with distinction. Five candidates offered Italian, and 2 were successful. Nine submitted Arabic, and 5 passed, 2 with distinction. Ten offered Spanish, and 9 passed, 3 with distinction. In Elementary Mathematics there were 1,854 candidates, and 1,188 passed; and in Additional Mathematics 614 sent up papers, and 414 passed, 54 with distinction. Of 1,166 offering Scripture Knowledge, 805 were successful, and 57 gained distinction. Of 1,140 offering English, 805 passed, 48 with distinction. Of 1,142 offering English Essay only, 656 passed (some candidates offering the whole subject of English passed in Essay only). In History there were 1,408 candidates, of whom 1,046 passed, 59 with distinction. Of 20 offering Geography, 15 passed, 1 with distinction. Four offered the composite subject, and 1 satisfied the examiners. In the Mechanical Division of Natural Philosophy, 126 out of 179 candidates were successful, 21 gaining distinction; in the Physical Division, 120 out of 196 passed, 13 with distinction; and in the Chemical Division, 128 out of 242 passed, 13 with distinction. Sixteen candidates offered Experimental Science, and 13 satisfied the examiners. Of 41 offering Physical Geography and Elementary Geology, 22 passed, 1 gaining the extra mark. Of 334 offering Biology, 265 passed, 28 with distinction. Of 139 offering Drawing, 100 were successful, and 10 gained distinction. Of 37 offering Music, 29 passed, 7 with distinction. For Lower Certificates there was an entry of 1,087, and 593 certificates were awarded. Of 117 candidates for school certificates, 40 were successful.

WITH regard to the Senior candidates at the Oxford Local Examinations, the Board of Revising Examiners call special

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attention to a defect which seems due to an abuse of oral teaching. With the principles of oral teaching they are in entire sympathy, but they remark there can be little doubt that candidates are taking advantage of it as a means of dispensing with the labour of accurate study. This has been most noticeable during the present year in the case of languages, and especially of the French language. Many papers which showed a general acquaintance with linguistic structure were remarkably inaccurate in point of detail; they confused terminations of similar sound, they made elementary blunders in accidence, they gave the impression of superficial and unscholarly work. A few years ago the chief danger in the teaching of secondary schools was a pedantic insistence on minutiæ; there is now no less danger of a reaction to the opposite extreme.

At the Trade Union Congress, held at Ipswich, Mr. W. Thorne, M.P., proposed a lengthy resolution dealing with education policy from the standpoint of the trade unions. The resolution urged organized workers to continue their efforts to secure Parliamentary and municipal recognition of the trade union education policy, which demanded (1) the State maintenance of school children; (2) scientific physical education, with individual medical inspection and records of the physical development of all children attending State schools, and skilled medical attendance and treatment for any requiring it; and in order to secure this (*a*) the development of the Medical Department at the Board of Education, the head of which should be directly responsible to the Board of Education, to whom he shall report annually; (*b*) the payment of an adequate grant from the Imperial Exchequer for purposes of medical inspection and for the establishment under every Education Authority of properly equipped centres for medical treatment; (*c*) the establishment under every Education Authority of scientifically organized open-air recovery schools, the cost to be borne by the community as a whole, and not in any part by charitable contributions; (3) the complete dissociation of these reforms from Poor Law administration; (4) that secondary and technical education be an integral part of every child's education and be secured by such a reform and extension of the scholarship system as would place a maintenance scholarship within the reach of every child, and thus make it possible for all children to be full-time day pupils up to the age of sixteen; (5) that the best intellectual and technical training be provided for the teachers of the children, that each educational district be required to train the number of pupil-teachers demanded by local needs and to establish training colleges, preferably in connexion with Universities or University colleges; (6) that the provision of educational buildings and facilities be obligatory upon the Local Authority, who should always maintain administrative control of the buildings and the facilities so provided; (7) that the cost of education be met by grants from the Imperial Exchequer and by the restoration of misappropriated educational endowments; and, further, having regard to the increasing cost of popular education, and also to the increasing value and notoriously undemocratic administration of the University and public school endowments, the Congress called upon the Parliamentary Committee to press the Government to appoint a Royal Commission to inquire into and report upon the educational endowments of the country. Remarkable progress, said Mr. Thorne, had been made with the policy outlined in the resolution. Medical inspection was very desirable within the last twelve months of school life, so that the doctor could certify whether or not the children were fitted to go into the workshops at a tender age. No doubt a number of people would ask where all the money was coming from to carry out the policy outlined. He recommended them to read Sir Robert Giffen's statement in the *Nineteenth Century* to the effect that there was enormous wealth to draw upon, with a gross income liable to income-tax of about a thousand millions and a further amount of two thousand millions which did not come under the income-tax. Surely, in a rich and wealthy country, the Government should grant a few more million pounds to give the children a decent education. The resolution was carried.

The Federation of University Women, which took shape at a meeting of twenty-six delegates at Manchester in June, is practically on a graduate basis: only women that possess a University degree or its equivalent, or are registered doctors or dentists, are qualified for membership; but associates and honorary members may be admitted under conditions. The objects of the Federation are: (1) to express the opinion of the whole body of University women, and to take concerted action on matters specially affecting them; (2) to stimulate their interest in municipal and public affairs; (3) to act as a means of intercommunication and co-operation between the members of different Universities; and (4) to encourage independent research by women. In connexion with this last aim, the Federation will direct its energies to founding fellowships, of the annual value of £150, which will be tenable at some University or other place suited to the special study undertaken. Another branch of the work will be the collection and publication of statistics affecting University women.

The Home Secretary has signified to the Council of the Royal College of Surgeons his decision to approve the by-laws regarding the admission of women to the examinations for the diplomas of the College. He has further expressed his willingness to sign the formal document which is to be submitted after the next meeting of the Council of the College on October 14. It is understood, however, that meanwhile it will be possible to complete the necessary formalities in time for women to enter for the examinations of the Royal College to be held in January next.

The programme of the coming term at the Working Men's College, Crowndale Road, N.W., the object of which is to bring University men and working men into closer touch and to give the latter a liberal education at a small cost, shows that classic and modern languages form strong sections, there being thirty-eight classes. Science, art, mathematics, history, literature, law, logic, economics, philosophy, and music students are all provided for. Of the ninety classes, thirty are voluntarily taught by University graduates. Many lectures admission to which will be free are included in the programme.

A meeting in connexion with the Trade Union Congress and in support of Ruskin Hall, Oxford, was held (September 8) in the Social Settlement Hall, Ipswich. The hall was crowded. The audience was not wholly favourable to the object of the meeting, and the speakers were constantly subjected to interruptions. Mr. C. W. Bowerman, M.P., who presided, gave an account of the events which led to the recent "strike" of students; it became a question at last whether every member of the Executive Committee or whether the Principal should resign. Since the resignation of the Principal, hardly a week had passed without the college's being the object of attack by those who fell foul of the Executive Committee. He had no objection to the formation of a new college, but if it was being erected to spoil and crush a college that had done excellent work for ten years on behalf of labour he was going to put his back to the wall and fight for Ruskin Hall. Prof. H. B. Lees Smith, chairman of the Executive Committee, said that the Committee had no intention whatever of making the college in any way a part of the University. It was not true that the University had insisted on the removal of sociology as a condition of union; as a matter of fact, the University had itself actively taken up the teaching of sociology in recent times. Mr. Shackleton, M.P., also denied that any proposals for union with the University had been made or would be entertained if made. It had been said that the college was not sufficiently "Labour"; if it became "Labour" in the narrow sense he would leave it. It was not a trade union or a political organization, but a college.

In the prairie districts of Canada there is a great dearth of teachers, and Mr. Obed Smith, the Assistant Superintendent of Emigration in London, has been in communication with the Dominion Education Authorities on the subject. In a letter Mr. Smith has received from Mr. D. W. Mackenzie, the Deputy Minister of Education for the Province of Alberta, the Minister says that the holders of degrees from British Universities are admitted to the Alberta Normal School in order to train for the highest class of certificates. The Canadian course, too, is very much shorter than that prescribed in England, Scotland, and Ireland. In the Dominion the authorities devote the whole time during the course strictly to pedagogical training, instead of dividing the time between academic and pedagogical work. Consequently they are able to cover a very satisfactory course in seven or eight months. Up to the present, however, the course has been limited to four months, as the authorities are anxious to prepare as many teachers as possible for the work; but for next year it is expected that the course for first-class certificates will be extended to seven or eight months. All British University

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graduates are invited to forward official evidence of the courses they have covered, and they will be given *pro tanto* standing in Alberta. Thus undergraduates who have completed two or three years in some of the British Universities occasionally go to Alberta and obtain first-class standing. Candidates who have matriculated at London University, or who hold equivalent standing, are admitted to the Alberta Normal School to train as second-class teachers, and holders of the senior local certificates of London, Oxford, or Cambridge are also admitted for similar training.

For some years past, at Cambridge, during the Long Vacation, lectures have been given in elementary science for primary teachers. But this year, on the recommendation of the Board of Geographical Studies, it was determined to have a course on geography, and to invite secondary teachers as well as primary. The result was that the number of persons attending rose to upwards of one hundred, coming from all parts of England and Wales, and including several head masters. The lectures were given by Mr. H. Yule Oldham (King's), Mr. P. Lake (St. John's), and Mr. R. H. Adie (Trinity). In addition, some lectures on botany were given by Mr. A. M. Smith (Emmanuel), assisted by Mr. H. H. Thomas (Downing). The course was most successful.

Dr. James Bellamy has survived but a few weeks his resignation of the Presidentship of St. John's College, Oxford. He was born in 1819, educated at Merchant Taylors School (where his father was Head Master), and elected a Scholar of St. John's in 1836. Thereafter he was regularly resident at Oxford, as Tutor, and then (1871) as President of his College. He was an excellent man of business, displaying great ability in University as well as in College affairs.

UNIVERSITIES AND COLLEGES.

London. The Principal has circulated the following letter to the press:—"It may be of interest to many of your readers to know that an Appointments Board has been constituted by the University of London. The terms of reference to the Board are 'to assist graduates and students of the University in obtaining appointments, and to co-ordinate and supplement the work done by the schools and institutions of the University with this object.' I am directed by the Board to express their hope that, through the medium of the press, the objects of the Board may be brought to the notice of graduates as well as of those who are able and willing to assist in furthering the work of the Board, the aim of which is to encourage the selection of University men for all posts in the work of which the possession of a University training on scientific methods is an advantage. They wish to assist graduates to find employment, and to assist employers to find, in the University ranks, suitable men for vacancies. It would assist the Board if, whenever your readers know of any vacant appointments suitable for University men, they would communicate with the Secretary of the Board, so that he may put forward selected candidates. In this way the work of the Board as an employment exchange would be greatly helped."

Birkbeck College.—The eighty-seventh Session was opened (September 27) by an address by Dr. Miers, Principal of the University of London. The courses of study provide for degrees in the faculties of Arts, Science, Laws, and Economics. There is a very complete curriculum for chemistry, physics, mathematics, botany, zoology, and geology. The laboratories are well equipped with modern apparatus and appliances, and research work is encouraged in various science departments. The Arts courses include English, classics, French, German, Italian, history, logic, mathematics, economics, and geography, all conducted by recognized teachers of the University. The Law courses comprise mercantile and common law, equity, conveyancing, and Patent law, and classes in English and Roman law, and constitutional law and history. More than one hundred students passed some examination of the University during the last session; and several students gained scholarships at the older Universities. There is also an Art school, which provides instruction in the various branches of artistic work (painting, modelling, life, design, &c.).

East London College.—The Calendar of the East London College, Mile End Road, for the session 1909–10 has just been issued. During the session 1908–9 the College has continued its development. To the equipment of the school of engineering, civil, mechanical, and electrical, valuable additions have been made, while the botanical department has been thoroughly reorganized. A considerable sum of money was placed at the disposal of the College Committee for these purposes by the Drapers' Company, who specially assigned a portion of their benefaction for the improvement of the College library, which is now housed in comfortable rooms and possesses a very fair collection of works dealing with the various subjects in the College curriculum. The College is the only school of the University in the Faculties of Arts, Science, and Engineering in the eastern half of London.

Manchester. A course in Agriculture, leading to a degree in Science, has been established. It will extend over three years, the first of which will as a rule be taken entirely at the University, while the second and third years will be taken partly at the University and partly at the College of Agriculture of the County Council of Cheshire at Holmes Chapel. This degree course is not intended to be the regular course of the Holmes Chapel students, for the majority of them will still take the ordinary diploma and not the University degree. The University is not aiming at giving the agricultural training which the farmer requires for his son, and which both the Lancashire and the Cheshire Councils make provision for, but the object is to make educational provision for those who intend to become teachers in agricultural colleges or to take some of the higher posts in farm management or the management of large estates. From the syllabus just issued by the University it appears that the College of Agriculture is a residential one, and its management in the hands of the Principal, assisted by a resident staff of lecturers.

Liverpool. The School of Civic Design, which has been established as a department of the School of Architecture in Liverpool University, owes its inception to the very evident demand existing for a system of training in the broader aspects of architecture and engineering. It is the first organization of its kind exclusively designed to meet the need of students who wish to study this subject. Town-planning, although intimately connected with architecture and engineering, is a distinct and separate study, and the primary object of the school is to equip architects, engineers, and others with a knowledge of the supplementary subjects essential to town-planning. In the organization of the school and the training of students the course will consist of lectures and studio work, and those specially interested in the subject will find much useful information in the prospectus for the ensuing sessions, which contains some artistic diagrams supplementary to lucid descriptive matter.

Belfast—Queen's. In his report for the past year, Dr. Hamilton says: "The University will have one important advantage over its predecessor. The College was miserably endowed. The amount charged on the Consolidated Fund for its maintenance was only £7,000 per annum. The University will happily possess a more adequate income. When the 'appointed day' arrives in the approaching autumn, its endowment will be £28,000 per annum, and when to this are added the private endowments of Queen's College, which will be transferred to it, and the University and class fees of students, the improvement in its financial position as compared with its predecessor will be very great. Already it has been able, owing to its increased income, to add very substantially to the teaching staff and to set aside a very much larger amount of money than ever before for University scholarships and other prizes. As a matter of fact, it is intended to devote an additional £1,000 per annum to this purpose, and thus not only to increase the number of the present College scholarships, but to add materially to their pecuniary value. To this method of utilizing a good part of our funds every year I attach great importance. In addition to the above-mentioned annual income, the sum of £60,000 is to be supplied by the Treasury for providing such additional buildings, lands, and equipments as may be found necessary, and, when it is remembered how much the 'Better Equipment Fund' had already done in this direction, it will be seen that the position has been very materially improved. More money will also now be available for the College Library and for the various scientific departments than ever before. Altogether, the provision for higher education and research in the North of Ireland will be

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far in advance of anything we ever before possessed. When to this I add that arrangements are in progress for providing the University with a new and thoroughly equipped playing field for the students, that the large and commodious house (hitherto occupied first by the Vice-President of the College and more recently by the Registrar) is being at present transformed into quarters for the use of the women students and for other purposes, and that a Committee of the University has under consideration a scheme for the erection of several ranges of new buildings, it will be seen that an altogether new era of University life has dawned upon Belfast." A very noticeable feature of the life of the past year was the exceptionally large attendance of women students.

Northampton Institute, Clerkenwell.

THE educational aim of the Northampton Institute is to provide classes in technological and trade subjects, attention being first paid to the immediate requirements of Clerkenwell, the district of London in which the Institute stands. The day courses are for students willing to give the whole of their time for one, two, or more years to a systematic training in technology. Day courses are provided in mechanical engineering, electrical engineering, watchmaking, and horological engineering. In horology, a very large amount of time is given to workshop practice. There are also day courses in technical optics, electrochemistry, and other subjects. Evening classes are held in a very great variety of subjects. At the Aldgate institution graded courses of study extending over several years are provided in the various departments, and also special lectures, with accompanying laboratory practice, are given to meet the needs of persons holding responsible positions in the manufacturing establishments in the neighbourhood who desire to keep in touch with modern developments in applied science. Among the announcements of such special work may be mentioned the course on liquid, gaseous, and solid fuel arranged for the benefit of workers in chemical and engineering establishments and others concerned with the use of fuel as a motive power; that on the fermentation industries, with particular attention to microbiology; and that concerned with metallurgical problems. The evening classes at East Ham are under the general supervision of a responsible principal, and it is consequently possible for a student to obtain advice in the direction of securing a properly co-ordinated course of study continuing from year to year. The numerous classes are adapted particularly to meet the requirements of young men and women engaged in the manual and other industrial trades of the locality.

THE BRITISH ASSOCIATION.

MEETING AT WINNIPEG.

THE seventy-ninth meeting of the British Association for the Advancement of Science was held at Winnipeg, opening on August 28, under the presidency of Sir J. J. Thomson.

THE PRESIDENTIAL ADDRESS.

The President said that, from the foundation of the Society until 1884, its meetings had always been held in the British Isles; in that year, however, the Association met in Montreal, and a step was taken which changed them from an insular into an Imperial Association. He claimed to have had some experience of at any rate one branch of Canadian science, for it had been his privilege to receive at the Cavendish Laboratory many students from Canadian Universities. Some of these had been holders of what were known as the 1851 (Great Exhibition) Scholarships. He had had many opportunities of seeing the work of these scholars, and his opinion was that there was no educational endowment in the country which had done or was doing better work. He had also had students from New Zealand, Australia, and the United States, and had thus had opportunities of comparing the effect on the best men of the educational system in force at such Universities with that which prevailed in the older English Universities. He had come to the conclusion that there was a good deal in the latter system which they had been wise not to imitate. The chief evil from which Cambridge suffered and which they had avoided was, he was convinced, the excessive competition for scholarships which confronted students at almost every stage of their education. The colleges in the University of Cambridge alone gave more than £35,000 a year in scholarships to undergraduates, and the case was much the same at Oxford. The result of this was that preparation for these scholarships dominated the education of the great majority of the cleverer boys who went to those Universities.

It was the practice in many Universities to make special provision for the reception of students from other Universities who wished to do original research or to study the more advanced parts of their subject, and considerable numbers of such students migrated from one University to another. It would be a good thing if this practice were to extend to students at an earlier stage in their career; especially should he like to see a considerable interchange of students between the Universities in the mother country and those in the colonies. He was quite sure that many English students, especially those destined for public life, could have no more valuable experience than to spend a year in one or other of the Canadian Universities, and he hoped some of the Canadian students might profit by a visit to English Universities. He could think of nothing more likely to lead to a better understanding of the feelings, the sympathies, and, what was not less important, the prejudices of one country by another, than by the youths of those countries spending a part of their student life together. Undergraduates, as a rule, did not wear a mask either of politeness or any other material, and had probably a better knowledge of each other's opinions and points of view—in fact, knew each other better—than did people of riper age. To bring about this communion of students there must be co-operation between the Universities throughout the Empire; there must be recognition of each other's examinations, residence, and degrees. Before this could be accomplished there must, as Mr. E. B. Sargant pointed out in a lecture given at the McGill University, be co-operation and recognition between the Universities in each part of the Empire.

Sir Joseph went on to give an account of recent developments in physics, dealing particularly with uranium and the untapped energy of the sun; and he then passed to a consideration of one of the most important and interesting advances ever made in physics, in which Canada, as the place of the labours of Profs. Rutherford and Soddy, had taken a conspicuous part—the discovery and investigation of radio-activity. In conclusion, he said that the new discoveries made in physics in the last few years, and the ideas and potentialities suggested by them, had had an effect upon the workers in that subject akin to that produced in literature by the Renaissance. Enthusiasm had been quickened, and there was a hopeful, youthful, perhaps exuberant spirit abroad which led men to make with confidence experiments which would have been thought fantastic twenty years ago. It had quite dispelled the pessimistic feeling, not uncommon at that time, that all the interesting things had been discovered, and all that was left was to alter a decimal or two in some physical constant. There never was any justification for that feeling, there never were any signs of an approach to finality in science. The sum of knowledge was—at present, at any rate—a diverging, not a converging, series. As they conquered peak after peak, they saw in front of them regions full of interest and beauty, but they did not see their goal, they did not see the horizon; in the distance towered still higher peaks, which would yield to those who ascended them still wider prospects, and deepen the feeling, whose truth was emphasized by every advance in science, that "Great are the works of the Lord."

EDUCATION.

The Rev. Dr. H. B. Gray, Warden of Bradfield College, President of the Educational Science Section, examined the educational factors of Imperialism, dwelling upon the medieval methods of English secondary education and the unsuitability of the equipment provided for those who should take a leading part in the life of the Empire beyond the seas. Asserting that there was no width of educational outlook in England until the last thirty years of the nineteenth century, he said the only strongholds of learning which presumed to give the lead to English secondary education were to be found on the banks of the Isis and the Cam. "In these antique, I hesitate to say antiquated, fastnesses, the 'grand old fortifying classical curriculum' was, till lately, regarded as the main, if not the only, high road to educational salvation." They preserved, indeed, to this day, almost the same entrance bars against admission to their thresholds as existed in pre-Reformation days, and the emoluments were still appropriated to the ancient models of education.

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The results on the lower rungs of the educational ladder had been lamentable. The curricula of the public secondary schools had been narrowed, or rather had never been widened coincidently with the development of new spheres of knowledge and enterprise. Three-quarters of the time-tables in the historic schools of England were given to the exclusive study of the grammar, literature, and composition in the languages of ancient Greece and Rome, and those who could not find any stomach for this medieval learning were actually driven away from those moss-grown seats of learning. How many unsung Hampdens or mute inglorious Miltons of mechanical genius had been lost to the world by the non-elastic systems even yet prevailing!

The President went on to propose the remedy. He would give a prominent place, he said, to the scientific teaching of geography, and particularly to historical geography, with special reference, of course, to the origin, growth, and progress of the British Empire. Again, he would enforce an elementary knowledge of science on every boy who passed through the stage of secondary education. But, above and beyond all, there should be brought into the foreground a co-ordinated study of English language and English literature. In this connexion he alluded to the recent Imperial Press Conference in England. The loyalty and devotion of the colonies, he said, admitted of no dispute. The doubt was of the loyalty of the centre of the Empire towards its extremities, through the crass ignorance which existed as to the geographical and political meaning of that Empire. In criticizing the old medieval system of education, however, which had prevailed in England till comparatively recent years, and which still had far too great a hold on the more venerable and important institutions of our island home, he would not have it supposed that he was an advocate of a complete, or even an approximately complete, basis of utilitarian education. He had no hesitation in expressing his belief that the time had come when not only the study of the two ancient languages should be reduced to one for all except scholastic specialists, but both should yield pride of place in our educational system to the claims of English, modern languages, mathematics, natural science, and, not least, manual training, so that our young men should be fully equipped to put their hand to any work which might confront them amid all the complex problems and critical situations to be found within the world-wide boundaries of the British Empire. Whether Oxford or Cambridge—particularly Oxford—would ever so reform themselves as to contribute largely to such solution remained to be seen. Personally, he looked with far greater confidence to the more recently organized Universities—those of London, Leeds, Sheffield, Manchester, and the like—to equip men educationally with those moral, physical, and intellectual qualities which are most in requisition in our great Dependencies and Commonwealths.

In conclusion, the President read from the *Times* an extract giving details of the new movement for the international interchange of University students. This scheme, which had been worked out independently whilst he had been preparing his address, embraced much of what he had advocated. To-day we were confronted with the problems of a vast and complicated Empire—great Commonwealths, great Dominions, sundered from each other by long seas and half a world—and, however closely science had geographically brought them together, we could not remain attached unless we grappled to each other and understood each other in the greatest of all interests, the educational training of our children in the one part of our Empire, to make them suitable citizens in another.

The Future of the Race.

Prof. H. E. Armstrong, President of the Chemical Section, said no problem could compare in importance with that of the future of our race. To consider it was the one plain duty before us, and the need became daily a more urgent one. Not only did we encourage deterioration at the lower end of the scale of intelligence: we were now, through our system of higher education, courting failure also at the upper end. Herbert Spencer forcibly drew attention many years ago to the tendency which the development of individuality must have to depress fertility, and to the evil effects of severe mental labour on women especially. It had been stated that, in the United States of America, the higher education of girls had been proved to sterilize them. Many of us probably had experience within our own circle of observation which would justify such a conclusion: there were so many ways in which education operated to retard marriage, even if it had no direct effect on the organism. Even if man-stuff and woman-stuff be in no fundamental way different materials, there were essential differences between the sexes which must be taken into consideration. During the active period of her life the woman was subject at intervals to influences which do not affect the man; various excitants came into operation and produced effects which were altogether remarkable; her mental condition was consequently in a state of continued flux. Cause and effect in these cases were undoubtedly chemical in their nature. The most disquieting feature of the times was the revolt of women against their womanhood, and their claim to be on an equality with man and to compete with men in every way. There should be no question of equality raised; when comparison was made between complementary factors the question of equality did not and could not come into consideration. It was clear that should the struggle arise—and it was to be feared that it was coming upon us—there could be but one issue: woman must fail, and in failing must carry man with her to destruction, for she would inevitably cease to exercise her specific womanly functions with effect, so delicate was the adjustment of her mechanism. The evolution of the two sexes had been on different lines, and different qualities had been developed in them. It was probable that the germinal differences were profound. And education could not remove the difference; although education might condition functional disturbances, it must be powerless to modify the structure and mechanism.

Man was in no way what he was to-day in virtue of the education he had received during a few generations past; the education of the race throughout time had been something entirely different from what was thought of now as education. "Nature, the dear old nurse," not man, had done the work by a severe and drastic process of selection—by picking out men capable of doing men's work, and by picking out women capable of doing women's work. She had constituted them helpmates, and had no thought of their being so silly as to wish to get in one another's way; this was a state brought on by an artificial, unsuitable system of education. The subject had been brought before the chemical world in England recently by the application of a number of women to be made Fellows of the Chemical Society. Many of the members had resisted the application because they were unwilling to give any encouragement to the movement which was inevitably leading women to neglect their womanhood, which was in itself proof that they did not understand the relative capacities of the two sexes and the need there was of sharing the duties of life. If there was any truth in the doctrine of hereditary genius, the very women who had shown ability as chemists should be withdrawn from the temptation to become absorbed in the work for fear of sacrificing their womanhood; they were those who should be regarded as chosen people, as destined to be the mothers of future chemists of ability. The argument was applicable generally; it was surely desirable in all cases of declared ability that the education of girls should be directed so as to produce not merely minimum disturbance of the woman's attributes and charms, but full understanding of the unique position of responsibility she occupied in the scheme of life.

Questions such as he had raised were of the utmost importance as bearing on educational policy. Their ideas of education were in almost as inchoate a state as they were in 1885. They had been led, it was true, to recognize that their scheme of popular elementary education was a terrible failure, that its whole tendency had been to emasculate their population; yet at the very time that they were making this discovery they were beginning to force their higher education along lines which experience showed must be ineffective—along literary lines. He would be the last to deny that there was an under-current of improvement perceptible, but this was directed only by sporadic influences, and was in no way favoured by most of those in authority. They were still suffering at the hands of those who had been their persecutors in the past—the clerics, who controlled most of the schools and whose outlook was almost as narrow as it ever was. The saving grace of science had in no way entered into their souls. How could it? The Universities made no attempt to secure their redemption. London of late years had even reversed the enlightened policy the University so long pursued and had allowed Latin to figure as alternative to science, not as the complement of science. The British Association seemed to have little or no effect on the public conscience. And the explanation was not far to seek. Their interests were too special; they were all too much wrapped up in their own affairs; too inconsiderate to co-operate effectively. They forgot or did not realize that "Something is wanting in science until it has

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been humanized"; they made no attempt to organize their forces and make good the claim they put forward to be the possessors of superior knowledge. A complete change of attitude on their part was required; they needed to play the part of propagandists. They were almost unknown as popular writers, and the days of popular lectures were past. Practically nothing was done to train the public mind, and school science was in no way effective.

ANTHROPOLOGY.

"The Influence of Anthropology, or the Science of Man, on the Course of Political Science," was the subject dealt with by Prof. John L. Myres before the Anthropological Section. The Bureau of Ethnology of the United States, said Prof. Myres, was the most systematic, the most copious, and the most scientific of the public agencies for the study of men as men. The only other which could be compared with it was the ethnographical section of the last census of India. In Canada the need was for the systematic study of the European immigrants, a record of Nature's dealing with them, and as long as that was unobserved the questions must remain unanswered: What kinds of men do best in Canada? What kind of men is Canada making out of the raw material which Europe is feeding into God's mills on this side? In England there had been created in vast towns great vats of fermenting humanity, under conditions of life which at the best were unprecedented and at their worst almost unimaginable. That was the great experiment in modern English anthropology—what happened to Englishmen in city slums? and they would hear before that meeting ended something of the methods by which scientists were attempting now to watch and record the outcome of that experiment in the making of the English of to-morrow.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on September 25. Present: Prof. Adams (Vice-President) in the chair, Prof. Adamson, Dr. Armitage Smith, Mr. Bain, Mr. Baumann, Rev. A. W. Boulden, Mr. Brown, Mr. E. A. Butler, Mr. J. L. Butler, Miss Crookshank, Miss Dawes, Prof. Dixon, Mr. Eve, Mr. Hawe, Mr. Holland, Rev. R. Lee, Dr. Maples, Mr. Pendlebury, Mr. Pinches, Mr. Rule, and Rev. Dr. Scott.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Summer Examination for Diplomas had been held on August 30 to September 4, and had been attended by 323 candidates. The Professional Preliminary Examination had been held on September 7 to 9, and had been attended by 213 candidates.

He reported that the examinations conducted by the College on behalf of the Newfoundland Council of Higher Education had been held at 108 centres in June last, and the class lists of the successful candidates, with the examiners' reports on the work sent up, had been forwarded to the Newfoundland Council in August. The total number of candidates examined in the four grades was 2,711.

Saturday, January 22, 1910, was fixed as the date of the next ordinary General Meeting of the members of the College.

The Report of the Finance Committee was adopted.

The free use of rooms at the College was granted to the English Committee of the International Home Education Congress (Brussels, 1910), for holding the meetings of the Committee.

Mr. W. J. Bates, Priory College, Priory Road, Hornsey, was elected a member of the College.

The following books had been presented to the Library since the last meeting of the Council:—

By MR. J. P. A. MARTIN.—Navarre's Histoire Générale de la Sténographie.

By the AGENT-GENERAL FOR NEW SOUTH WALES.—Annual Report of the Department of Mines, New South Wales, 1908.

By the BOARD OF EDUCATION.—Modern Sides of Public Schools (Merchant Taylors, Clifton, and Bedford Grammar School); Syllabus of Physical Exercises for Public Elementary Schools, 1909.

By the UNIVERSITY OF MANITOBA.—Examination Papers, 1909.

By G. BELL & SONS.—Charles and Hewitt's Experimental Mechanics for Schools.

By A. & C. BLACK.—Black's Geographical Pictures, Series VIII (Mountains); Reynolds's Africa and Australasia (Regional Geography).

By MACMILLAN & CO.—Davies's Geography of the British Isles; Wallis's Practical Exercises in Geography; Gregory and Hadley's A Class Book of Physics; Siepmann's Primary French Course (Part III); Pellissier's Marivaux' Le Jeu de l'Amour et du Hasard (with word-and phrase-book).

By METHUEN & CO.—Methuen's Simplified French Texts (Ceppi's Edmond Dantès, and Ingham's M. de Beaufort à Vincennes); Chambers's Constitutional History of England; Davies's Junior History Examination Papers; Webb's Systematic Geography of the British Isles; Wilmot-Buxton's Stories from the Old Testament.

By the OXFORD UNIVERSITY PRESS.—Plunket's The Fall of the Old Order; Spenser's Faerie Queene, Book I; Milton's Paradise Lost (Books I and II); Shelley's Adonais, Alastor, and other Poems; Byron's Prisoner of Chillon, Mazeppa, and Lament of Tasso.

By RIVINGTONS.—Dix's First Latin Lessons; Edwards's Junior British History Notes (Parts I, II, and III).

Calendar of the University of Glasgow.
Calendar of the London School of Economics.
Calendar of the University College, Cork.
Calendar of the University of St. Andrews.
Calendar of the University College, Exeter.

COLLEGE OF PRECEPTORS.

PROFESSIONAL PRELIMINARY EXAMINATION.—PASS LIST.

SEPTEMBER, 1909.

THE Supplementary Examination by the College of Preceptors for Certificates was held on the 7th, 8th, and 9th of September in London, and at five other local centres—viz., Birmingham, Bristol, Leeds, Liverpool, and Manchester. The following candidates obtained Certificates:—

First Class [or Senior].

Pass Division.

Hutchinson, A. M. — Maude, A. H. *ch.*
Lunnon, L. G. *a.* — Templer, H. E.

Second Class [or Junior].

Honours Division.

Bachelor, S. *e.g.f.* — Toulmin, S. N.

Pass Division.

Adams, A. H.	Gripper, G. D.	Payne, T. M.
Ambler, R.	Hamilton, M. St. C.	Rhys, R. I.
Barnden, P. W.	Harris, R. A.	Richards, G. V.
Bastable, O.	Hollely, W. F. *ch.*	Roberts, W. S.
Beauchamp, W. S.	Holmes, G. C.	Rook, A. F.
Beaumont, E. V.	Hughes, J. L.	Rowland, J. *g.*
Berryman, G. F.	Hyde, H. B.	Sadler, N.
Booth, G. A.	Jenkins, F. A. M. B.	Simpson, B. C. W.
Bradfield, G. R. D.	Jewell, W. *ch.*	Smith, L. B.
Buckley, H. H.	Klosz, R. L.	Solomon, S. *ch.*
Bull, W. M.	Kolligs, F. F.	Stafford, Miss I.
Carr, S. *f.*	Laborda, F. E. R.	Thornton, P. *a.*
Carroll, L. J.	Lambie, W.	Tippet, J. A.
Clark, L. M.	Lennon-Brown, A. G.	Trevers, C. T.
Coe, W. E.	McEwan, G. F.	Tyrrell, E. J.
Dixon, C. C.	Meggs, A. H. *f.*	Wallace, F. H.
Garry, E. W.	Nealon, G. R.	Wallis, M. J. T.
Gibson, C. C. G.	Ord, G.	Warde, A. H.
Green, A. S.	Payne, A. V.	White, G. A. O.

N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively:—

a. = Arithmetic. *e.* = English.
ch. = Chemistry. *f.* = French.
g. = Geography.

IT is officially announced that Lord Londonderry and thirty-five other subscribers to the fund for the better equipment of Queen's College, Belfast, have forwarded a petition to the Lord Lieutenant praying his Excellency to disallow the statutes which have been made for the Queen's University of Belfast in so far as they provide for the teaching of scholastic philosophy at the public expense. The petitioners urge that the teaching of this subject would be contrary to the representations which were made and upon the strength of which the equipment fund was subscribed, and, if persisted in, will end in ligitation on the part of the subscribers to the equipment fund who are opposed to any religious or denominational teaching being introduced into the College at the public expense. They are all friends of the College, and are anxious to see it succeed under the recent Act. They are aware that, apart from the subscribers to the equipment fund, there is a strong and growing feeling among the majority of the people in Ulster hostile to the introduction of scholastic philosophy into the arts faculty as a subject to be taught at the public expense, and they feel satisfied that, if that portion of the statutes is not disallowed, it will have a most injurious effect on that portion of the public which has hitherto supported the College, both by means and by students, and to which the College must look in the future for similar support.

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COLLEGE OF PRECEPTORS CERTIFICATE EXAMINATIONS.—JULY, 1909.

LIST OF SUCCESSFUL CANDIDATES AT COLONIAL AND FOREIGN CENTRES.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

a. = Arithmetic. | *d.* = Drawing. | *f.* = French. | *s.* = Scripture.
al. = Algebra. | *e.* = English. | *h.* = History. | *sh.* = Shorthand.

The small figures [1] *and* [2] *prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.*

In the addresses, Coll. = College, Coll. S. = Collegiate School, Conv. = Convent, Inter. = Intermediate, S. = School, Sec. = Secondary.

[Bracketing of names denotes equality.]

A THIRD CLASS PRIZE for GENERAL PROFICIENCY was awarded to D. H. Williams, St. Joseph's Intermediate School, Lacytown, Georgetown, British Guiana, who was bracketed equal with another candidate in the fourth place.

BOYS.

First Class [or Senior].—Pass Division.

Alves, W. — Private tuition
Moore, R K. — Queen's Coll., Nassau
Rae, F.R. — Queen's Coll., Nassau

Second Class [or Junior].—Honours Division.

Ekanayaka, W.A. *a.al.* — Private tuition
Sandiford, S. *s.a.al.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Thomas, N.G.G. *sh.* — Middle S., Georgetown, B. Guiana
Panchalingam, C. — Central Coll., Colombo
Felix, J.E. *a.* — Private tuition

Second Class [or Junior].—Pass Division.

Nugara, G.T. — Lorenz Tutory, Colombo
deKretser, E.C. — Private tuition
[1]Kelly, H.N. — Queen's Coll., Nassau
Perera, C.O. — Lorenz Tutory, Colombo
Bertus, L.S. — Private tuition
Misso, H.W. *d.* — Private tuition
Peterson, P.R.C. — Private tuition
Oardoff, F. — Private tuition
Dias, L.M.M. — Private tuition
Jayawardane, P.A.M. — Private tuition
Ammon, J. DeR. — Middle S., Georgetown, B. Guiana
Abeyaratne, B. — Central Coll., Colombo
Browne, W.V. — Middle S., Georgetown, B. Guiana
Fernando, J.V. — Private tuition
Jayawardena, F.N. — Lorenz Tutory, Colombo
Tamber, R.R.R. — Private tuition
Perera, J.A P. — Private tuition
Pietersz, D.L. — Lorenz Tutory, Colombo
Gunasekara, V.R. — Private tuition
Pieris, H. — Central Coll., Colombo
deSilva, C.J.C. — Private tuition
Nagoormeera, M.Z. — Private tuition
Selman, O.C. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Pritchard, A.P. — Queen's Coll., Nassau
[1]Alphonsus, S. — Central Coll., Colombo
Millaritia, C.E. — Private tuition
Clarke, C.F. — Comenius Secondary S., Georgetown, B. Guiana

Third Class.—Honours Division.

Williams, D.H. *s.e.h.al.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Bloison, L. *s.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana

Third Class.—Pass Division.

[2]Marshall, G.I. — Middle S., Georgetown, B. Guiana
[2]Cozier, C.A. — Middle S., Georgetown, B. Guiana
[2]Maynard, A.E. — Comenius Sec. S., Georgetown, B. Guiana
Stoby, P.S. *s.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Johnson, C.H. *al.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Lynch, G.N. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Johnson, J.S. *d.* — Queen's Coll., Nassau
Rae, D.C. *d.* — Queen's Coll., Nassau
Fung-Kee-Fung, M. — Middle S., Georgetown, B. Guiana
Ying, E. — Middle S., Georgetown, B. Guiana
DeMattos, R.T. — Private tuition
Curry, O.H. — Queen's Coll., Nassau
Beaton, G.R.A. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Dingwall, H.J.H. — Comenius Sec. S., Georgetown, B. Guiana
Pereira, J. — Private tuition
Cole, G.M. — Queen's Coll., Nassau
Sears, G.J. — Queen's Coll., Nassau
Thompson, C.S. — Queen's Coll., Nassau
Melville, D.L. — Middle S., Georgetown, B. Guiana
Chee-A-Wai, J.A. — Middle S., Georgetown, B. Guiana
Skinner, W. — Comenius Sec. S., Georgetown, B. Guiana

GIRLS.

Second Class [or Junior].—Pass Division.

Wolfe, A.M. — Queen's Coll., Nassau
DeWeever, I. *s.* — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Wells, O. — Ursuline Conv., Georgetown, Demerara
Albury, M.A. — Queen's Coll., Nassau
Pendleton, I.H. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Spencer, E. — Ursuline Conv., Georgetown, Demerara

Third Class.—Honours Division.

Farnum, L.M. *f.* — Conv. of Mercy, Charlestown, Demerara
Wills, A. *e.a.* — Ursuline Conv., Georgetown, Demerara

Third Class.—Pass Division.

Juta, E.L. *f.* — Conv. of Mercy, Charlestown, Demerara
Jellicoe, D.E. — Queen's Coll., Nassau
Kelly, G.M. *d.* — Queen's Coll., Nassau
Beamish, M. — Werk-en-Rust, Georgetown, Demerara
Whyte, A.M. — Conv. of Mercy, Charlestown, Demerara
Jacobs, M. — Ursuline Conv., Georgetown, Demerara
Evertz, E.H. — Conv. of Mercy, Charlestown, Demerara
Renton, B. — Conv. S., Gwelo, Rhodesia

LOWER FORMS EXAMINATION.—PASS LIST.

BOYS.

Amoury, E. — Queen's Coll., Nassau
Azore, H.L. — Middle S., Georgetown, B. Guiana
Bishop, O.W. — Coll. S., Georgetown, B. Guiana
Brown, C.A. — Middle S., Georgetown, B. Guiana
Chichester, H.L.M. — Middle S., Georgetown, B. Guiana
Correia, E. — St. Stanislaus' Coll., Georgetown, B. Guiana
Craig, R. — St. Stanislaus' Coll., Georgetown, B. Guiana
Curry, A.R. — Queen's Coll., Nassau
D'Andrade, O. — Werk-en-Rust, Georgetown, Demerara
DeChalus, C. — St. Stanislaus' Coll., Georgetown, B. Guiana
DeFreitas, A. — St. Stanislaus' Coll., Georgetown, B. Guiana
DeLima, C. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
DeRyck, C.D. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Ellis, H. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Farmer, F.E.L. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Farmer, L. — Werk-en-Rust, Georgetown, Demerara
Field, C.B. — Middle S., Georgetown, B. Guiana
Fung, J. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Gillette, J. — Conv. S., Gwelo, Rhodesia
Hayley, K.C. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Hinds, C.A. — Middle S., Georgetown, B. Guiana
Humphry, E. — Werk-en-Rust, Georgetown, Demerara
James, J.A. — St. Stanislaus' Coll., Georgetown, B. Guiana
Jorge, G.P. — Coll. S., Georgetown, B. Guiana
Kaufman, R. — Werk-en-Rust, Georgetown, Demerara
Kerry, J.C. — Middle S., Georgetown, B. Guiana
Kohr, J. — Conv. S., Gwelo, Rhodesia
Lee, T. — Middle S., Georgetown, B. Guiana
Loi, P.N. — Middle S., Georgetown, B. Guiana
Low, H. — Middle S., Georgetown, B. Guiana
Ouckama, C.A.D. — Middle S., Georgetown, B. Guiana
Rodrigues, J. — Coll. S., Georgetown, B. Guiana
Rogers, C.P. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Ross, H. — St. Joseph's Inter. S., Lacytown, Georgetown, B. Guiana
Spooner, C.I. — Coll. S., Georgetown, B. Guiana
Wason, D.C. — Middle S., Georgetown, B. Guiana
Wiltshire, C.L. — Middle S., Georgetown, B. Guiana
Yong, J. — Middle S., Georgetown, B. Guiana

GIRLS.

Abraham, A. — Ursuline Conv., Georgetown, Demerara
Ashby, L.G. — Middle S., Georgetown, B. Guiana
Azevedo, H. — Ursuline Conv., Georgetown, Demerara
Bridgewater, M.L. — Middle S., Georgetown, B. Guiana
Cumberbatch, R. — Middle S., Georgetown, B. Guiana
Cunha, E. — Conv. of Mercy, Charlestown, Demerara
Davies, J. — St. John's Public S., Bulawayo
De Silva, C. — Ursuline Conv., Georgetown, Demerara
Devitt, V. — Conv. S., Gwelo, Rhodesia
Farnum, F.M. — Conv. of Mercy, Charlestown, Demerara
Fernandes, L. — Conv. of Mercy, Charlestown, Demerara
Ferreira, U. — Ursuline Conv., Georgetown, Demerara
Gambim, D. — Queen's College, Nassau
Gonsalves, E. — Ursuline Conv., Georgetown, Demerara
Gonsalves, N. — Ursuline Conv., Georgetown, Demerara
Harris, L. — St. John's Public S., Bulawayo
Haynes, V.I. — Middle S., Georgetown, B. Guiana
Hunt, H. — Convent S., Gwelo, Rhodesia
Jones, M. — Ursuline Conv., Georgetown, Demerara
Kransdorp, A. — St. John's Public S., Bulawayo
Lopes, E. — Ursuline Conv., Georgetown, Demerara
Marshall, G.A. — Middle S., Georgetown, B. Guiana
McKenzie, A. — Ursuline Conv., Georgetown, Demerara
Minns, I. — Queen's Coll., Nassau
Mirtle, A.H. — St. John's Public S., Bulawayo
Mockford, R.L.M. — St. John's Public S., Bulawayo
Parnell, K. — Ursuline Conv., Georgetown, Demerara
Paul, K. — Ursuline Conv., Georgetown, Demerara
Pilgrim, L. — Ursuline Conv., Georgetown, Demerara
Pritchard, C.L. — Queen's Coll., Nassau
Rogers, D.S. — The Coll. S., Georgetown, Demerara
Sampson, M. — Ursuline Conv., Georgetown, Demerara
Santos, M. — Ursuline Conv., Georgetown, Demerara
Shawzin, D. — St. John's Public S., Bulawayo
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CURRENT EVENTS.

Fixtures. At the Members' Meeting of the College of Preceptors, to take place on Wednesday, October 20, there will be a discussion on "The Relations between Heads of Schools and Parents." The discussion will be opened by W. Campbell Brown, Esq., M.A., F.C.P.

* * *

The School Nature Study Union will be addressed by Miss C. von Wyss on "Some Recent Experiments in the Teaching of Nature Study" at the College of Preceptors, on October 15, at 7.45 p.m.

* * *

At the University of London, University College, Public Introductory Lectures will be delivered: (1) by Prof. Sir W. Ramsay, on "Radium Emanation, one of the Argon lines of Gases," October 4, 9 a.m.; (2) by Prof. L. M. Brandin, on "Les Chansons de geste du cycle de Guillaume d'Orange," October 6, 5 p.m.; (3) by Prof. G. D. Hicks, on "Present Tendencies in Philosophical Thought," October 6, 5 p.m.; (4) by Prof. J. A. Fleming, on "Electrical Inventions and the Training of Electrical Engineers," October 6, 5 p.m.; (5) by Prof. H. R. Kenwood, on "What Hygiene demands of School Teachers," October 6, 7 p.m.; (6) by Prof. E. J. Garwood, on "The Origin of Scenery," October 7, 11 a.m.; (7) by Prof. C. Read, on "The Psychology of Character," October 7, 2 p.m.; (8) by Prof. W. M. Flinders Petrie, on "Styles of Sculpture in Egypt," October 7, 2.30 p.m.; (9) by Prof. A. F. Pollard, on "The Royal Commission and the History School in the University of London," October 7, 5 p.m.; (10) by Dr. T. G. Pinches, on "Assur, the Old Capital of Assyria," October 7, 5 p.m.; (11) by Mr. D. Jones, on "The Pronunciation of Old French," October 7, 5.30 p.m.; (12) by Prof. A. F. Murison, on "The Making of the Roman Law," October 7, 6 p.m.; (13) by Mr. D. Jones, on "The Pronunciation of Modern French," October 7, 6.30 p.m.; (14) by Dr. Spearman, on "Education based on Experiment—its Achievements and its Promise," October 8, 6 p.m.; (15) by Mr. D. Jones, on "The Alphabetic Representation of Language," October 9, 11 a.m.; (16) by Mr. D. Jones, on "The Pronunciation of English," October 11, 5.30 p.m.; (17) by Dr. H. Hirschfeld, on "The Phoenicians in Cyprus and Attica," October 13, 4 p.m.; (18) by Dr. Mabel H. Bode, on "Monasticism in Ancient Indian Literature," October 13, 5.30 p.m.; (19) by Prof. E. A. Gardner, on "Evolution and Decadence in Art," October 15, 2 p.m.; (20) by Mr. Halsey Ricardo, on "The Italian Renaissance in Architecture," October 19, 6 p.m.; (21) by Prof. Sir John Macdonell, on "The Place of Greece in the History of Jurisprudence," October 20, 5.30 p.m.; (22) by Prof. A. J. Butler, on "Dante and the Renaissance," October 27, 3 p.m. (Inaugural Barlow Lecture).

* * *

The following Special Courses for Teachers have been arranged by the University of London, University College, in conjunction with the Education Committee of the London County Council: (1) a course on Latin Literature by Mr L. Solomon, beginning October 11 at 6 p.m.; (2) a course on Mathematical Drawing by Dr. L. N. G. Filon, beginning

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October 13 at 6 p.m.; (3) a course on "The British Empire, its Past, its Present, and its Future," by Prof. A. F. Pollard, beginning October 14 at 6 p.m.; (4) a course on "Greek Art, with special relation to the Collections in the British Museum," by Prof. E. A. Gardner, beginning October 16 at 11 a.m.—The Chadwick Training Course in School Hygiene will be given by Prof. Kenwood and Dr. Meredith Richards, beginning October 6, at 7 p.m.

* * *

THE Common Examination for Entrance to Public Schools will be held on November 25 and 26. The last day for applications is November 15, and the papers will be sent out on November 23. Further information from Mr. F. Ritchie, M.A., Beechview, Sevenoaks.

* * *

THE Child Study Society, London (90 Buckingham Palace Road, S.W.), announce "Short Addresses on Child Study," by Miss Alice Ravenhill, Dr. C. W. Kimmins, and Dr. G. E. Shuttleworth, October 7; on "The Influence of Child Study upon Religious Education," by the Rev. W. Hume Campbell, M.A., Principal of St. Christopher's College, Blackheath, October 14; and on "Care of Children under the Poor Law," by Sir John Gorst, October 28. The hour is 8 p.m.

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AN Inter-University Conference on University and Tutorial Classes in Industrial Centres will be held at Oxford on October 2.

* * *

A READING Circle of the British Empire Shakespeare Society will be inaugurated at the Passmore Edwards Settlement, Tavistock Place, W.C., October 1, 8.15 p.m. Mr. A. Harding Steerman (same address) is Organizing Secretary.

Honours.

THE University of Birmingham will confer the honorary degree of LL.D. on the following distinguished persons (October 20), in connexion with the recent Royal visit (when it was not practicable to hold the ceremony):—

W. N. Atkinson, H.M. Superintendent Inspector of Mines for South Wales, Past President of the Institution of Mining Engineers; Right Hon. A. J. Balfour, M.P.; the Bishop of Birmingham; Bernard Bosanquet, late Professor of Moral Philosophy, St. Andrews; Henry T. Butlin, F.R.C.S., President of the College of Surgeons; Andrew Carnegie; Right Hon. Joseph Chamberlain, M.P. (Chancellor); Sir William Crookes, F.R.S.; Maurice Fitzmaurice, C.M.G., Chief Engineer to the London County Council; Sir Archibald Geikie, President of the Royal Society; Right Hon. R. B. Haldane, K.C., M.P.; John Scott Haldane, Reader in Physiology, Oxford; J. Rendel Harris, Head of the Woodbrooke Settlement, Exegetical Scholar; Sir Charles Holcroft, Bart.; G. J. Johnson, to whose co-operation and advice the form of the original endowment by Sir Josiah Mason was largely due; Sir A. B. W. Kennedy, F.R.S.; Sir Joseph Larmor, F.R.S., Lucasian Professor of Mathematics, Cambridge, Sec.R.S.; Right Hon. Walter Long, M.P.; Prof. Gilbert Murray, Oxford; Sir Richard Douglas Powell, M.D., President of the College of Physicians; Sir William Ramsay, F.R.S., University College, London; Lord Rayleigh, F.R.S.; Ernest Rutherford, F.R.S., Professor of Physics, Manchester; Arthur Shadwell, Economist; Mrs. Henry Sidgwick, Principal of Newnham College; Lord Strathcona and Mount Royal; Prof. Silvanus P. Thompson, F.R.S., ex-President of the Institution of Electrical Engineers; William A. Tilden, F.R.S., long Professor of Chemistry in Mason College; Sir J. J. Thomson, F.R.S., Professor of Physics, Cambridge, President of the British Association; Charles S. Tomes, F.R.S., F.R.C.S., Past President of the British Dental Association; T. Herbert Warren, President of Magdalen College, Vice-Chancellor of Oxford University; Dr. Bertram Windle, F.R.S., President of Queen's College, Cork, long Dean of the Faculty of Medicine in Birmingham; Viscount Wolverhampton.

* * *

PROF. GRIFFITH, Reader in Egyptology in the University of Oxford, has been elected a Corresponding Member of the Imperial Academy of Sciences in Vienna.

WILBERFORCE UNIVERSITY, Ohio, has conferred the honorary degree of LL.D. upon Dr. Charles Forshaw, Bradford, in recognition of his writings in the American Masonic press, and of his services to literature in general.

Endowments and Benefactions.

SIR WILLIAM O. DALGLEISH, Bart., of Errol Park, has made another gift of £5,000 (making a total of £11,000) to the Building Fund of the new Technical College, Dundee. This gift completes the necessary sum—£30,000.

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THE Oxford University Endowment Fund has now reached the sum of £139,000.

* * *

THE Jews' College still lacks £10,000 for its Endowment Fund. An appeal for further subscriptions has been issued.

* * *

THE Tulane University (Louisiana) has received some £400,000 from the Newcomb estate, which will go to the Women's Department, founded by Mrs. J. L. Newcomb in memory of a daughter; £10,000 from Mrs. I. A. Richardson towards the establishment of a chair of Botany; and £1,000 from the late Miss L. Miles for the purchase of books for the Library.

* * *

HARVARD UNIVERSITY has received £3,000 from Mrs. J. A. Rumrill to establish three scholarships in memory of her late husband.

Appointments and Vacancies.

MR. CHARLES JOHN HOLMES, B.A., Slade Professor of Fine Art in the University of Oxford, has been appointed Director, Keeper, and Secretary of the National Portrait Gallery, in succession to Mr. Lionel Cust, M.V.O., who retires.

* * *

MR. GEORGE A. GIBSON, M.A., LL.D., Glasgow and West of Scotland Technical College, has been appointed Professor of Mathematics in the University of Glasgow.

* * *

DR. T. H. BRYCE, Lecturer on Anatomy, Queen Margaret College, Glasgow, has been appointed Regius Professor of Anatomy in Glasgow University.

* * *

DR. JOHN MARNOCH, Surgeon to and Lecturer on Clinical Surgery at the Royal Infirmary, Aberdeen, has been appointed Regius Professor of Surgery in Aberdeen University.

* * *

MR. T. MATHER, F.R.S., has been appointed Professor of Electrical Engineering at the City and Guilds Central Technical College, in succession to Prof. Ayrton.

* * *

MR. WILLIAM BROWN, Lecturer in Electro-Technology, has been appointed Professor of Physics in the Royal College of Science, Ireland, in succession to Prof. W. F. Barrett, who retires. Mr. Brown is succeeded by Mr. Felix Haskett.

* * *

THE REV. G. W. THATCHER, M.A., Tutor at Mansfield College, Oxford, has been offered the post of Warden of the Camden College, Sydney, N.S.W., in succession to the Rev. J. G. Fraser, D.D., resigned.

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MR. W. A. J. ARCHBOLD has resigned the Principalship of the Mohammedan Anglo-Oriental College, Aligarh.

* * *

THE REV. ROBERT LAW, M.A., B.D. Edinburgh, has been appointed Professor of the New Testament and Exegesis in the Presbyterian College, Toronto.

* * *

DR. A. D. DENNING, Lecturer in Experimental Physics, Birmingham University, has been appointed Superintendent of Industries and Inspector of Technical and Industrial Institutions in the Presidency of Bengal.

* * *

MR. GRANVILLE POOLE, Lecturer in Mining, &c., in Birmingham University, has been appointed one of H.M. Assistant Inspectors of Mines for the York and Lincoln district.

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DR. A. RUSSELL, D.Sc. Glas., Lecturer on Applied Mathematics and Head of the Laboratory Department, has been appointed Principal of the Electrical Standardizing, Testing, and Training Institution (Faraday House).

* * *

MR. W. BUCHANAN, Chief Engineer to the Electric Construction Company, Wolverhampton, has been appointed Lecturer on Electrotechnics and Design of Electrical Machinery at Faraday House, London.

* * *

DR. ARNOLD H. GIBSON, Senior Demonstrator and Assistant Lecturer in Engineering and Lecturer on Hydraulics, Manchester University, has been appointed Professor of Engineering in University College, Dundee.

* * *

MR. W. T. MACCOLL, M.Sc., Halifax, has been appointed Head of the Sunderland Technical College.

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DR. JAMES MILLER, Lecturer in Bacteriology, Birmingham University, has been appointed Lecturer in Pathology in Edinburgh University.

* * *

AT University College, Aberystwyth, Dr. S. Adams has been appointed Lecturer in Applied Mathematics; Dr. Fleure, Lecturer in Zoology; and Mr. O. T. Jones, of the Geological Survey, Lecturer in Geology.

* * *

MR. A. Y. CAMPBELL, M.A., has been appointed Lecturer in Classics in University College, Reading.

* * *

MR. J. H. JONES has been appointed Lecturer in Social Economics in the University of Glasgow.

* * *

MRS. EDWIN NEAVE, of Gedling, Notts, has been appointed Lady Warden of University Hall, St. Andrews.

* * *

THE Head Mastership of Sutton Valence Grammar School is vacant. Graduates, under forty-five. Apply to Mr. C. Spencer Smith, 53 Palace Street, Westminster, S.W.

* * *

THE City of London School requires (1) a classical assistant master and (2) a senior chemistry master. Age should not exceed thirty-five. £300, rising to £450. Apply, by October 16, to Mr. A. J. Austin, at the school, on forms to be obtained from him.

Literary Items.

MESSRS. A. & C. BLACK announce "The Billiard Year-Book for 1910," recording the principal amateur and professional games of the past season, and giving full information about the game and its developments. It will be published with the authority of the Billiard Association, and will be the only official book relating to the game. They also intimate the issue of several interesting series of Colour Books suitable for young folk.

* * *

AMONG the numerous announcements of the Oxford University Press are the first two volumes of "Oxford Studies in Social and Legal History," edited by Prof. Vinogradoff; "Historical Essays," by the late Prof. Pelham; the fifth and final volume of Dr. Farnell's great work, "The Cults of the Greek States"; and considerable extensions of various series.

* * *

THE Cambridge University Press announces "The Story of the Roman Republic" in three volumes, by Mr. W. E. Heitland, M.A., Fellow of St. John's College, Cambridge.

* * *

MESSRS. DENT promise the early issue of a new (limited) one-volume edition of "Le Morte d'Arthur," illustrated and decorated by Aubrey Beardsley. They also announce a volume on "Homer and the Iliad," by Miss Melian Stawell, formerly of Newnham College, again reviewing the scope and character of the original poem.

* * *

MESSRS. DENT are publishing editions of "Gulliver's Travels" and "Lamb's Tales from Shakespeare" (by Mr. Arthur Rackham, in colour and in black and white, liberally illustrated).

* * *

MR. FISHER UNWIN is publishing an elaborately illustrated work on "Town Planning in Practice," by Raymond Unwin. He is also bringing out an English edition of "Studies in Logical Theory," edited by Prof. John Dewey, University of Chicago; "The Evolution of the Sciences," by Prof. L. Boullevigne, Marseilles; and a series of three volumes on the French Revolution, each centred in one of the great personalities of the period (Mirabeau, Danton, Robespierre), by Charles F. Warwick.

* * *

SIR ISAAC PITMAN & SONS have commenced to issue the "Bicentenary Edition of Pitman's extra-Illustrated Boswell's Johnson," edited by Roger Ingpen, with 568 illustrations. It will be completed in twenty weekly parts. The first part indicates that it will be a very handsome book.

* * *

MESSRS. GINN will shortly publish a "History of English Literature," by William J. Long—a sympathetic and scholarly study, with illustrations.

* * *

MESSRS. D. APPLETON & Co. will publish immediately "The Story of Oil," by Walter S. Tower, telling the romance of the oil-fields of America, with numerous illustrations.

* * *

THE *Bellman* (Minneapolis) has unearthed and published (July 10) Prof. Skeat's poem on "The Death of St. Edmund," with Mr. Laurence Housman's illustrations. The poem was sent to the *Universal Review* in 1889, and Mr. Housman prepared drawings, but the *Review* died without publishing them. "The poem was never given to the world; the drawings were lost and forgotten." The poem is in the alliterative, unrhymed metre of "Piers the Plowman," and the two illustrations are characteristic.

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General. Emeritus Prof. Campbell Fraser, who succeeded Sir William Hamilton in the Chair of Logic and Metaphysics in Edinburgh University, received a congratulatory address from old pupils, colleagues, and other friends, on the occasion of his ninetieth birthday.

* * *

The *British Medical Journal* (September 4), the *Hospital* (September 4), and the *Medical Press* (September 8) give their comprehensive annual summaries of opportunities of medical education in the three kingdoms.

* * *

Sir James Crichton Browne formally opened the new Hostel in connexion with Dumfries Academy (September 8). During the first year forty-seven girl pupils will be in residence. "It is only since the passing of the Education Act of 1908," says the *Scotsman*, "that it has been legal for Local Authorities to build and equip such a hostel, and it is possible that we are on the eve of a great transformation in the school environment of Scotland." The hostel is mainly due to the generosity of the late Dr. Thomas McKie.

* * *

Dr. Gray, Warden of Bradfield College, has bought 1,928 acres some twenty miles from Calgary, in Alberta, and two days' journey from Winnipeg. He expects to take out his first batch of boys next Easter.

A NEW PUBLIC SCHOOL.

(From the *Morning Post*.)

In the course of a necessarily short article it is impossible—even if it were desirable—to enter into a detailed discussion of the many ways in which the present public schools fail to fill their true place in the national economy. These things have been again and again discussed, and among sincere educationists there is now a pretty general consensus of opinion. During the last two years, for instance, letters have been constantly appearing in the *Morning Post* from men who speak with undeniable authority—chief among them Mr. A. C. Benson and Dr. Rouse—all of whom condemn the present condition of our public schools. They do so for different reasons and have different remedies to propose. Dr. Rouse is chiefly concerned that we should view the classical languages and literatures from a new and reasonable standpoint. He is in the fortunate position of having a school in which he can, without let or hindrance, carry his plans into practice. But there are other reformers who take the standpoint of Mr. Benson, who see with general dissatisfaction the effect of the great boarding schools on those who are "educated" in them." These reformers would like to see a new spirit pervade our public schools. They would like to see schools in which the only worldly prospect set before the masters was not the chance of becoming—some time in the dim future—an hotel-keeper on a small scale. They would like to see public schools which would attract to their service none but men of the highest ability and of settled aim. And, further, they would like to see the teaching remodelled so as to exclude the obvious inference that the schools exist for the salvation of a small minority of boys and for the perpetual damnation of the great majority.

Now it may not be possible to convert the authorities to these views. On the other hand, there is always the alternative that the reformers shall become their own authority. And certain reformers, after long consideration and discussion, have decided that an effort ought to be made by those who can agree upon a broad scheme of public school reform to realize their ideals in practice. There must be many men who have sufficient faith in their ideas of what education ought to be to translate those ideas into action. Of course no one man can do it. Not only must the necessary funds be found, but the right men must be induced to leave their present work and embark upon a possibly hazardous undertaking. Everything will depend upon the amount of support and loyal co-operation which is forthcoming.

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Radley	1847	250	£97
Brighton	1847	195	£81 to £93
Lancing	1848	180	£74 to £101
Wellington	1856	518	£113 to £135
Bradfield	1859	325	£118
Haileybury	1862	430	£81
Clifton	1862	595	£106
Malvern	1865	506	£99
Leys (Cambridge)	1875	174	£109

Judged by the test of numbers, Cheltenham, Marlborough, Clifton, Wellington, and Malvern appear to have been the most successful. In the last column are the fees charged for boarders, from which it would appear that the cheaper schools are less successful as a rule than those where higher fees are paid. Haileybury, though apparently an exception, is not really so; for the present school took over the buildings of the old East India Company's College on favourable terms, and is thus less highly capitalized than other modern schools. This is a point of great importance, for it is the initial outlay required to provide the superior accommodation considered necessary in modern public schools that checks their increase and keeps up the fees. In this respect Malvern was very fortunate. The buildings were erected by a syndicate, independent of the School Company, and it was not until some years after its foundation that the latter was able to buy out the syndicate and become the owner of the school buildings. The late Lady Emily Foley took great interest in Malvern College from its inception; in fact, the first land owned by the company was acquired from her under an easy option, and thus the need of ready money at the outset was so considerably relieved that the College was registered as a company with a nominal capital of only £20,000. The comparatively low fees charged at Malvern are probably due to these early advantages and consequent low capitalization. The practical lessons of the nineteenth-century foundations would seem then to be:

1. That unless land and buildings can be acquired in an exceptional manner fees must range well over £100 a year.
2. That three hundred boys must be regarded as the minimum number for a successful public school.
3. That the best schools are crowded, and that there is therefore room for more of them.
4. That the southern portion of England appears to be more popular with parents than the northern.

The last point is probably connected with the absence of dialect. A Yorkshire or Lancashire boy, after a few terms at a south country school, returns home with what is considered by his family to be a more refined manner of speaking.

The Staff Problem.

Closely connected with the financial aspect of public schools is the question of staff, and it is notorious that, with the exception of the head masters, they are very much underpaid. The result is that the schools no longer get the best men from the Universities. As a rule, there is no pension, and unless an assistant master can succeed to a boarding house by the time he is forty his prospects are gloomy indeed. For his training, fourteen or fifteen years of the best education, a high University degree, and considerable strength of character are indispensable; some athletic or games distinctions are very desirable additions, and the remuneration is inferior to that of a Civil Service clerk. It is true there are apparent compensations in long and fairly frequent holidays; but these are no more than necessary to enable a master to recover from the "fag" of a school term and to take up the burden again. The success of a modern public school is chiefly dependent upon personnel, and to get the best men the best price must be paid not only in the matter of salary, but also in the shape of substantial assistance to a pension fund which should form part of the endowment of every public school.

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Requisites of the New School.

As for curriculum, what is wanted is a new public school without any "sides" at all, where the general education up to the age of fifteen should include living languages and their literature, history, mathematics, science, geography, and, of course, religious teaching. From about that age a boy might be allowed to specialize according to his tastes, abilities, and future career. The classics would be taught in sets, as modern languages are now, and a boy's place in school order would depend not, as at present, on his linguistic gifts, but on the aggregate of the results in each branch of his studies.

Starting with a clean slate, such a school would be free to remedy most of the recognized defects in the older foundations. The following suggestions are offered for criticism:—

1. Small groups or classes, not exceeding fifteen boys each, in every subject taught. No promotion until the standard of the group to be left has been fully attained.

2. A young staff, selected for teaching ability rather than for high University degrees. Compulsory retirement at the age of fifty-five on a partly contributory pension scheme.

3. House masters to be selected solely by merit, to be paid an adequate salary as house masters, and to be relieved from the cares of housekeeping by a professional caterer.

4. The school to have its own dairy farm, orchard, and market garden, its own laundry and bakery, its own electric light and water supply, and, if possible, its own drainage system.

5. It should be in a fairly high, bracing situation, somewhere on the Downs, and, if possible, near some existing centre of education.

6. The curriculum should be as simple as possible for the purpose of a sound and thorough general education. Many schools now advertise an "engineering branch," but such work is better postponed until the boy is fit to get the utmost good out of one of the numerous technical colleges, and he can only be made fit by thorough grounding in mathematics and science, not by premature specialization. If he could pass the certificate examination at seventeen or eighteen and go on as soon after as possible to the University or technical college and begin his specialization there, he would overtake and pass the boys who had been allowed to dabble in their post-school subjects whilst still at school to the prejudice of their general education.

7. Sunday lectures should be made a feature. Sunday is a dull day at school. Few boys have much religious feeling, and the constant succession of chapels bores and hardens them. A lecture, to which they are not obliged to go, by a man they do not see every day, a lecture on any subject would be a welcome relief to monotony. A lecturer with a pleasant delivery and a well known reputation can rouse dull boys to enthusiasm; and the re-start on Monday morning after such a fillip would be far fresher and more lively than after three compulsory chapels. This is no reflection on the school chaplains, for the harm is mostly done at home, where religion is too often kept only for Sunday use as a sort of official respectability, valuable as an easy means of keeping the house quiet and "saving the servants."

Cost of the New Foundation.

To establish a school of this class would entail an outlay of £100,000. The whole of this sum would not be required at the outset, as the boarding-houses and classrooms would only be built as numbers required. The chapel, gymnasium, laboratories, and workshops might well be temporary buildings, to be made permanent as funds become available. But not less than £50,000 should be in sight before the school could be opened. Annual school expenses for the full number of three hundred boys may be estimated at £19,000, which would be raised by a school fee of £70 per annum, from which twenty major scholars would be exempt, and towards which twenty minor scholars would pay a reduced fee of £45 each per annum. A boarding fee of £80 would cover expenses in houses averaging 43 boys each. The rent of these houses, at 6 per cent. of their cost, would form a sinking fund sufficient to pay off £50,000 of debentures at 4 per cent. in thirty years. Interest at 5 per cent. on £50,000 in shares is included in the estimate of school expenses.

The history of schools like Uppingham, Marlborough, Malvern, and others shows how generous parents, old boys, and other well-wishers have been to the schools they believed in, and, given the right sort of head master, there is good reason to feel confident that the twentieth-century school would meet with the same generous support, the same enlightened benevolence, and an even greater measure of appreciation. The increase of wealth has been so enormous, the rise in the general level of middle-class income so unprecedented, since the great Victorian schools were founded, and *pari passu* with this increase the interest taken in educational matters is now so much keener and more widespread, that it would be strange indeed and almost shameful if an appeal for help in founding the first Edward VII. Public School should fail to meet with prompt and liberal response.

EQUAL PAY FOR EQUAL WORK.

(From the *School Journal*).

The State Legislature of New York passed a Bill framed to make mandatory the payment of equal salaries to men and women teachers doing equal work. Mayor McClellan has vetoed it, as he did before in a similar case. He takes the position that the Board of Estimate has full power to act in matters of salary equalization without legislative interference. He suggests, further, that by equalizing the salaries of men and women teachers an injustice is done to those women who are not in competition with men, especially those in the primary grades.

The one important constructive move made by Mayor McClellan is the declaration that a Commission should be appointed to investigate the causes that led to the appeal by the teachers to the Legislature in regard to the adjustment of salaries. The Commission is to consist of persons who are not teachers and have no connexion with either the Board of Education or the Board of Estimate and Apportionment. These are the conditions to be investigated: First, the average rates of living of teachers, both male and female, in this city, and to ascertain if possible the general trend of responsibilities which they have to meet on the salary offered to them by the city. Second, to compare, as near as possible, the salary rates in other cities with those offered to teachers in this city. Third, to investigate and accurately determine what increase to the budget such recommendations as they may deem proper to submit will make.

Mayor McClellan is to be commended for insisting that these matters should be investigated. There are, however, several important considerations which do not seem to be adequately covered in the scope of the Commission's inquiry, unless the phrase "general trend of responsibilities" is permitted to be sufficiently elastic to include an examination into the comparative efficiency or sufficiency of men and women in the various positions under the Board of Education. If the Mayor's Commission is to supply a report that reasonable people may well accept as authoritatively conclusive, a sufficient appropriation must be made to allow consulting with experts. The economic phases of the inquiry are easily determined. The educational phases are not.

We lack impersonal standards for the comparative judgment of the efficiency of teachers. So there is much division of opinion and consequent injustice. It is not at all improbable that a teacher will be marked "Excellent" by one inspector and "Poor" by another. The inspectors again may be declared efficient or inefficient by others who pretend to know what such an inspector should be and do. Opinion rules. And opinion is a fickle thing. A basis of established facts supplies the only reliable assurance of ultimate justice. Dr. J. M. Rice has proved that an impersonal standard of this kind is possible. But little has been done by lawful authority to promote the recognition of the demonstration. That is why assertions of the superiority of men over women teachers, or vice versa, may pass for legal currency. Prerogatives may be governed by them, and salaries graded accordingly. No reasonable citizen would deny that the pay of teachers should be regulated by merit rather than by sex. But we must have a standard for judging merit.

If the investigation should prove that the school system is actually in need of men teachers in the elementary schools, and that the only reason for not appointing enough men at the present time is that they are not to be had with the salaries that are paid, the argument in favour of "equal pay for equal work" will be stronger than ever. Men receive considerably less as teachers than they do in other occupations making equal demands as regards preparation and responsibility. They have failed to secure more attractive salaries because there have always been plenty of women ready to take their places even for less money. It might be said that, by raising the salaries of women to the scale now prevailing for men, the competition would become more intense than ever, and the likelihood of an increase to attract men would vanish altogether. On the other hand, it is just possible that, having to pay "men salaries," the Boards of Education will put more men into the places where these prevail, and thus gradually eliminate women from the best salaried positions. The latter result rests, of course, on the assumption, never yet actually proved, that men in certain positions in elementary schools produce better results than women.

Mayor McClellan's Commission will have to face questions like

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the following: "Are men needed as teachers in the elementary schools—in what grades or under what conditions?" "Are men superior to women?" "What places, if any, must always be filled by men?" Questions such as these strike clearly at the root of the contentions which impelled teachers to go to the State Legislature with demands for "equal pay for equal work." The sort of investigation that is needed to answer them necessitates an extensive examination into the comparative efficiency of men and women teachers in various positions and under varying conditions. There is no doubt that it is urgently needed. The argument so far is all on the side of the agitators of "equal pay for equal work."

REVIEWS.

English Literature.

The Cambridge History of English Literature. Edited by A. W. Ward, Litt.D., F.B.A., Master of Peterhouse, and A. R. Waller, M.A., Peterhouse. Vol. III, *Renascence and Reformation.* (9s. net. Cambridge University Press.)

The classical Renascence, which exercised such a powerful influence in enriching and moulding the literary languages of modern Europe, finds an admirable herald in Principal Lindsay, who narrates the coming of Erasmus, and portrays the more important of the English humanists, notably appreciating Colet as "a great personality, who impressed every one with whom he came in contact by his incalculable force of character," and as "perhaps the only man who exercised a commanding and abiding influence on the brilliant Dutch humanist." The effects of the Reformation upon the national literature are traced in judicious detail by Prof. Whitney, with the collateral result of demonstrating how varied were the religious impulses of the movement and how vital they were for the national welfare, upon both their positive and their negative sides. In a short but very suggestive chapter, the Rev. R. H. Benson estimates the losses to learning through the destruction of books and of other opportunities for study in connexion with the dissolution of the religious houses, and the gains to learning through the rise of enterprise on the ruins of tradition:

It is impossible, with any degree of justice (he says), to set the gains and the losses resultant from the dissolution in parallel columns. The former were subtle, far-reaching, immature; the latter were concrete, verifiable, and sentimental. Rather, until some definition of progress be agreed upon by all men, we are only safe in saying that, from the purely intellectual side, while the injury to the education of those who lived at the time, and the loss of innumerable books, antiquities, and traditions for all time, are lamentable beyond controversy, yet, by the diffusion of general knowledge, by the widening of the limits of learning and philosophy, by the impetus given to independent research, art, and literature, and by the removal of unjustifiable prejudice, we are the inheritors of a treasure that could hardly have been ours without the payment of a heavy price.

The array on both sides will not be challenged, but there seems to be some confusion of thought or of expression in making the one series the price of the other. The German influences on English literature, represented mainly by Barclay and Skelton, were neither very important nor very lasting: they are adequately summarized by Dr. Koelbing. The progress of social literature in Tudor times, sketched by Prof. H. V. Routh, brings into prominence a great variety of anecdotal, critical, and "merry" pamphlets, broadsides, "toys and trifles," that are neglected in the ordinary histories of literature, but reflect a curious light upon the English middle-class life of the sixteenth century:

The great changes of the sixteenth century—the increase of luxury, the rise of the middle classes, the growth of competition, the suppression of the monasteries, the expansion of Europe, the frequence of pestilence—inspired a vigorous literature quite distinct from the theological and æsthetic movements of the time. But, while the popular printing-presses were thus exposing fraud and enlightening ignorance, the superstitions of an earlier age were reappearing in an aggravated form. The belief in fetishes, totems, the evil eye, luck-bones, folk-remedies, love charms and nefarious magic, was rampant in England. Christianity and paganism were, among the unthinking and the untaught peasantry, inextricably mingled. Jugglery and legerdemain had still the glamour of the miraculous, and magic was used to discover lost things, bring back wayward lovers, and cure disease. Astrologers still foretold events by studying the position of the stars, and sold information as to the auspicious hour for all kinds of human enterprise, from the founding of cities to the taking of medicine. . . . It was an age of monstrous hallucinations.

Mr. T. F. Henderson deals with Sir David Lyndsay and the later Scottish "Makaris" (poets), and Prof. Hume Brown with the Reformation and Renascence in Scotland.

"The New English Poetry," of which Wyatt and Surrey were the pioneers, was an outcome of the closer touch of England with the kingdoms of the Continent. "For the first time in a more than incidental way England submitted her intellectual life to the influences of the Renascence." The inspiration of the new poetry "was almost entirely foreign; it was upon French, and especially upon Italian, models that the courtiers of Henry VIII. founded the poems which now began to be written in large numbers." Mr. Harold H. Child works out the history concisely and pointedly. A separate chapter is assigned both to "A Mirror for Magistrates"—"an important link between medieval and modern literature"—a monument of industry, extending to more than 1,400 closely printed pages, and retailing stories of misfortune and wickedness in high places, from Albanact (B.C. 1085) to Queen Elizabeth—and to George Gascoigne, the first of the Elizabethan court poets: both by Prof. J. W. Cunliffe. It is enough to note that the poetry of Spenser is treated by Dr. W. J. Courthope; the Elizabethan sonnet by Dr. Sidney Lee; Prosody, from Chaucer to Spenser, and Elizabethan Criticism, by Prof. Saintsbury; Chroniclers and Antiquaries by Mr. Charles Whibley. The review of Elizabethan Prose Fiction, by Prof. Atkins, of Aberystwyth, is careful and luminous:

When all this prose fiction has been placed in its proper perspective it presents a record of experiment rather than of achievement. . . . [The future lay with a type of work which provided entertainment independently of dramatic accessories.] It is in the prose fiction of the time that the beginnings of this type are found, and this historical interest is its first claim to recognition. As to its actual achievement, one has to confess that this is comparatively small, for it worked from no model and was inspired by no tradition. It was wanting in coherent form and definite purpose; its plots lacked logical development—the threads of a story might be hopelessly confused; its characters were stiff and formal, and its style was not always adapted to the matter in hand. Nor can it be said to treat as yet the problems of life: it was content, for the most part, with simple narrative, with rough outlines of character, and with studies of manners. But it improved its methods as it went on, it experimented in styles both simple and ornate, it made use of dialogue, and it realized some of the wit and humour, as well as the descriptive power, of which prose was capable.

A very effective handling of the Marprelate controversy is furnished by Mr. J. Dover Wilson, Lector in English in the University of Helsingfors; and an exceptionally fine chapter on "The Laws of Ecclesiastical Polity" is from the accomplished pen of Dr. Foakes-Jackson. Mr. W. H. Woodward outlines efficiently the conditions of English Universities, schools, and scholarship in the sixteenth century. In the final chapter Prof. Atkins notes the changes in language from Chaucer to Shakespeare. The volume, as has been indicated, is most comprehensive, with stress upon many things that are little noticed in less extensive summaries, but that still have their importance. But it is somewhat curious that writers full of the facts of English literature should be so generally oblivious to, or careless of, the niceties of English composition.

Mendelism.

Mendel's Principles of Heredity. By W. Bateson, M.A., F.R.S., V.M.H., Fellow St. John's College, Professor of Biology in the University of Cambridge. (12s. net. Cambridge University Press.)

The importance of heredity in the theory of the evolution of living things—with, perhaps, the exception of man—has long been recognized. In recent years, owing chiefly to the influence of the writings of Sir Francis Galton and his school, the importance of heredity in the study of the evolution of man himself has begun to be more adequately realized. The modern view is that every physical and mental character of man is the product of two factors—namely, an inherited tendency or capacity, and the influences exerted by the external conditions of the individual's life. Attempts to estimate the relative importance of these two factors have generally been futile, because both factors are essential in the final product. But, when we find social reformers and educationists ignoring altogether the inherited factor and acting on the theory that the only method of improving mankind is by improving the conditions in which he lives, then it is time that the students of the Laws of Heredity (or, as it is now called, the Science of Genetics) should come forward and direct the attention of the public to the great

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advances that have been made in their science. This Prof. Bateson has done very effectually in the work before us for what is known as the Mendelian Theory of Heredity.

There are two rival theories of heredity at present in the field—namely, the Galtonian or ancestral theory and the Mendelian theory. Galton's law is founded on a statistical comparison of the occurrence of the same characters among sons, parents, grandsons, &c. This law has been stated by its author to be that "the two parents contribute between them on the average one-half of the total heritage of the offspring, the four grandparents one quarter, the eight great grandparents one eighth, and so on." This law is repudiated by Prof. Bateson as being inconsistent with the great discoveries made by Mendel and his disciples. It is, however, by no means generally agreed that the two laws are necessarily inconsistent, and, notwithstanding Prof. Bateson's confidence in his own view, we think it is advisable for the present to suspend our judgment on this question.

The Mendelians apply the experimental method to the elucidation of the laws of heredity, and by this method a great many remarkable and unexpected discoveries have been made. Mendel, an Austrian clergyman, the founder of this new theory, published in a somewhat obscure local journal the results of his experiments on the hybridization of plants about the date of the appearance of Darwin's "Origin of Species." The extraordinary interest excited by Darwin's work resulted in Mendel's experiments being completely ignored till they were unearthed a few years ago. One of the classical experiments of Mendel consisted in crossing tall and short varieties of peas. He found that the first generation of crosses were all tall. In the second generation three-fourths of the peas were tall and one-fourth were short. The tall peas in this last generation were called *dominants* and the short peas *recessives*. One-third of the dominants were found to be pure—that is, they had only dominant offspring—and all the recessives had only recessive offspring. Two-thirds of the dominants were found to be hybrid—that is to say, their offspring was partly dominant and partly recessive.

To explain these phenomena Mendel devised a beautifully simple theory, namely, the *segregation* of the unit characters in the gametes (or germ cells), so that the units combined in all possible pairs to form the zygote or fertilized cell. If to this principle we add the assumption that one of the two characters, whenever present in a zygote, formed the *soma* of the completely developed individual, this phenomenon of *dominance* explains why the apparent dominants form three-fourths of the whole offspring.

The principles of Mendel have been further developed by his successors, and especially by Prof. Bateson and his pupils at Cambridge. The subject becomes much more complicated when different pairs of alternate or allelomorphic characters are present in the gametes which join to form the zygote. But the same beautifully simple principle of the random combination of all the elements contributed by the male and the female holds. Prof. Bateson gives an interesting example of this in his explanation of the different varieties of fowls' combs produced by crossing different breeds of poultry. Without the Mendelian theory, the results would be quite inexplicable; with it, they are simply explained, and the results of new experiments in crossing can be confidently predicted. The Mendelians are the first to give any rational explanation of the phenomenon of sex. The explanation is rather startling. The female ovum contains both the male and the female characters, with femaleness dominant. The male germ contains the male characters only. In other words, the female is bisexual and the male unisexual. The Mendelian theory is also applied by Prof. Bateson to explain the extraordinary colour phenomena obtained by crossing animals and plants with different characteristic colours. The author, however, has to admit that there are still some of these phenomena for which no satisfactory explanation is forthcoming.

The book is written in a racy style, which is quite the antithesis of the ordinary dry-as-dust scientific treatise It is undoubtedly far the best exposition of this important new theory that has as yet been published, and it is evidently the work of a master in the subject.

THE THEORY OF GROUPS.

An Introduction to the Theory of Groups of Finite Order. By Harold Hilton, M.A. (14s. net. Clarendon Press.)

The author treats of a branch of mathematics of which he himself has evidently made a close study, but he places himself in the position of a teacher of students taking up the subject for the first time and standing in need of sympathetic assistance from the source of information. Notwithstanding the fact that, in order to master the Theory of Groups, little is demanded beyond a preliminary knowledge of general algebra, and more especially of Theory of Numbers, it is yet the case that earlier standard treatises on the subject may present many difficulties to the uninitiated. It is to the author's appreciation of what seemed to him a real need that mathematical students owe the production of the present volume. It will be advantageous to notice some of the means adopted by the writer in order to simplify the treatment of his subject. In the first place, wherever he can do so without detriment to the treatise as a whole, he refrains from introducing long and specially difficult discussions. On the other hand, and as a natural consequence of the gain of space, the number of exercises is exceptionally large. Amongst them readers will find many that allow of very ready solution, but these will have fully served their purpose if only they help the student to absorb principles and grasp the full force of the various propositions. Another very valuable source of assistance (provided always that it is drawn upon judiciously) is the closing chapter, in which suggestions are offered as a guide to the solution of most, if not all, of the more difficult exercises. Again, in framing his definitions, the writer has sought to benefit by the knowledge that the language—or, perhaps we should say rather, the terms—connected with the subject are by no means definitely fixed. He has aimed always at making such definitions terse and to the point. The work is supplied with bold and clearly drawn diagrams, but the arrangement of type and spacing is far from satisfactory, as the text gives in general the effect of being overcrowded and of being overpowered by the illustrations where they occur.

GENERAL NOTICES.

MATHEMATICS.

The Elementary Theory of the Symmetrical Optical Instrument. By J. G. Leathem, M.A. (2s. 6d. net. Cambridge University Press.)

This is Mr. Leathem's second contribution to the valuable series of Cambridge Tracts in Mathematics and Mathematical Physics. It is the eighth of the tracts, and may be regarded as the companion of No. 7, since both are occupied with the important study of optical instruments. Mr. Leathem takes up the subject with special reference to those symmetrical instruments through which, when in use, the light is transmitted in a direction practically parallel to the common normal of the surfaces of revolution of which their refracting surfaces consist. The subject is approached as simply as possible, for this tract, like all the others hitherto issued as members of the series, is intended to be useful to readers on their first introduction to the study of the particular branch of science considered. In the earlier chapters, in order that the desired simplicity may be secured, the discussion proceeds along the lines followed by Gauss in one of his memoirs. Again, we note that, with a view to possible simplification of treatment, the author discusses the general optical properties of the instrument before attempting to investigate the functional form of its constants. In a short tract the writer is necessarily unable to enter into a detailed examination of special instruments. He has, however, been successful in his endeavour to include the consideration of some points connected with equivalent thin lenses and field-glasses, which are not, in general, treated in our text-books. The brief sketch closes with "A Syllabus of Propositions concerning the characteristic function and the focal lines of a pencil of rays of light." The treatment is thoroughly capable and lucid.

Practical Arithmetic and Mensuration. By Frank Castle, M.I.M.E. (2s. Macmillan.)

Mr. Castle's intention is to meet the demands of evening continuation schools and technical classes. His work, entirely modern in conception, follows a plan possessing many features of practical utility. Thus, the order of instruction is made to depend on the pupils' needs, as they are likely to arise in the course of study. Also rules taught through the medium of arithmetic are without delay given a more general form, and thus serve to inculcate the ideas underlying elementary algebra. With reference to the first named characteristic, it may, however, be well to suggest the value of caution, lest the growing tendency to disregard any definite order in teaching be carried too far and it become more and more difficult to gauge with reasonable accuracy the mathematical knowledge of young students. Several passages in the text ought to be revised. The reader is told, for example, that a fraction whose denominator is not 10 or a "*multiple*" of 10 is called a vulgar fraction. Again, the right angle is first stated to be an angle in which one of the arms is *perpendicular* to the other; the help of a diagram does not constitute a sufficient justification for so loose an explanation. The rhombus is inaccurately defined, and the term "significant figures" is used without

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any previous or accompanying discussion as to its meaning. The above are but isolated passages, but their presence amidst so much that is useful is to be regretted.

Elementary Algebra. By V. M. Turnbull, M.A. (2s. 6d. Cassell.)

There are arguments both for and against the issue of elementary mathematical treatises in which the answers to exercises are not given in any form whatever. The present volume will be more especially attractive to the teachers who prefer that such results should not be published. Used in accordance with the author's intention—namely, as the complement to effective oral instruction—the text-book under consideration cannot but prove a valuable one. It consists principally of exercises—many for oral, but very many more for written work. The small quantity of bookwork forms a good basis for a useful course in elementary algebra, and deals very briefly with the rudiments of the subject as far as geometrical progressions. The course also provides for a first introduction to logarithms and the theory of indices. The text furnishes the teacher with well considered notes and helpful explanations. In their bearing on the processes of addition and subtraction, the author discusses the laws governing the combination of positive and negative signs with more than ordinary clearness; and, for the beginner, Mr. Turnbull is perhaps wise in merely stating the usage that obtains in connexion with multiplications and divisions.

SCIENCE.

"First Books of Science."—*A First Book of Botany.* By Elizabeth Healey, A.R.C.Sc. Lond., Assistant Lecturer in the University College of South Wales and Monmouthshire. (1s. 6d. Macmillan.)

Miss Healey essays to follow the order of the school year and begins with fruits—a matter of no great practical moment. The exposition is very simple and clear, and appended to each chapter are judicious directions for practical work. "Observation and experiment are the dominating notes of the lessons, and from the beginning great stress is laid on the need for constant practice in accurate sketching from actual plant specimens." Questions and exercises on the several chapters are appended. There are eighty-nine figures. The little book forms a very agreeable and efficient introduction to a most interesting and important branch of study.

A Course of Inorganic Chemistry for Colleges. By Lyman C. Newell, Ph.D. (Johns Hopkins). (6s. Heath.)

This is primarily a students' book, for such as devote a year to general chemistry. It handles the usual topics in adequate fullness and with proper attention to the more recent conceptions applied to the interpretation of chemical and physical phenomena; and it gives considerable space to the application of modern principles to chemical industries. The treatment is careful, simple, and lucid; and problems and exercises are furnished at the end of each chapter. There are eighty-nine figures; and portraits of Sir James Dewar, Sir William Ramsay, Mendelejeff, Moissan (who isolated fluorine), and Mme. Curie.

Preliminary Mechanical Drawing, for Schools and Evening Classes. By Joseph T. Treleaven, Medallist in Practical Plane and Solid Geometry and Naval Architecture. (1s. 6d. Longmans.)

Mr. Treleaven presents a graduated series of eighteen plates (a dozen of them coloured), containing over fifty figures and accompanied with clear descriptions and directions. The scheme is well devised and capably worked out. It will give impetus and guidance in the practice of actual and useful measurement in schools and evening classes, and form an easy and natural transition from elementary plane and solid geometry to the first stage of technical drawing. An interesting and capable work.

ENGLISH LITERATURE.

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MATHEMATICS.

16667. (Professor COCHEZ.)—On donne deux droites fixes Ox et Δ. On prend un point variable M sur Δ et sur la bissectrice de l'angle xOM on porte une longueur OP = $\sqrt{(OM)}$. Lieu de P.

Solution by C. M. ROSS.

Take Ox as axis of x and a line perpendicular to Ox through O as axis of y.

Let the co-ordinates of M be (h, k), and of P be (x', y').

If the angle XOM be 2θ, then

$$k/h = \tan 2\theta, \quad y'/x' = \tan\theta \quad \ldots\ldots (1).$$

Again, if the equation of Δ be $ax + by = 1$,

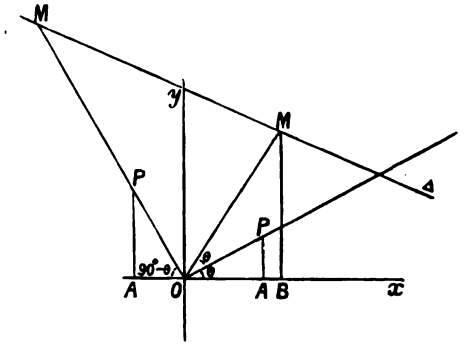
since M is any point on Δ, $\quad ah + bk = 1 \quad \ldots\ldots (2).$

Now $\quad OM^2 = h^2 + k^2$ and $OP^2 = x'^2 + y'^2$;

therefore $\quad x'^2 + y'^2 = (h^2 + k^2)^{\frac{1}{2}}$, by hypothesis $\ldots\ldots (3).$

From the equation (1) $k = 2x'y'/(x'^2 - y'^2)\,h$,

and from (2), by substitution,



$$h = (x'^2 - y'^2)/[a\,(x'^2 - y'^2) + 2bx'y'], \quad k = 2x'y'/[a\,(x'^2 - y'^2) + 2bx'y'].$$

Finally, from (3), $\quad a\,(x'^2 - y'^2) + 2bx'y' = \pm 1.$

But this is the condition that (x', y') should lie on the curves

$$a\,(x^2 - y^2) + 2bxy = \pm 1,$$

which are equilateral hyperbolas.

N.B.—There must be two curves as there are two bisectors, one of the acute and the other of the obtuse angle.

16644. (T. STUART, D.Sc.)—Is there any criterion by which we can determine whether the equations $\pm N = x_1^4 - 2y_1^2 = x_2^2 - 2y_2^4$ are soluble or insoluble in integers, N being a number of the form ± 1, mod 8? Exhibit your method by applying it to the numbers 281 and 241.

Partial Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

This question is Question 16135 repeated, and was partly settled under that number. In order to make use of the results published under that "solution," it will be convenient to use the notation

$$N_1 = t_1^4 - 2u_1^2, \quad N_2 = t_2^2 - 2u_2^4, \quad N_3 = 2u_3^4 - t_3^2, \quad N_4 = 2u_4^2 - t_4^4.$$

The first criteria are that N_1 being odd must be of one of the linear forms $(8n \mp 1)$, and also of one of the 2-ic forms $(e^2 - 2f^2)$, $(2f'^2 - e'^2)$; and, if the successive solutions of $N = (e_r^2 - 2f_r^2) = (2f_r'^2 - e_r'^2)$ be formed, some one or more of the 2-ic parts (e_r, f_r, f_r', e_r') must equal square at some one or more of the steps. This last criterion is both necessary and sufficient; but, as the values of e_r, f_r, f_r', e_r' rise rapidly with r, it is very often too laborious for practical use.

Under Question 16135 several cases were given with t, u algebraically solvable. To these may now be added

$$N = \tfrac{1}{2}(x^4 + y^4) = 2\,[\tfrac{1}{2}(x^2 + y^2)]^2 - (xy)^2 = 2u_3^4 - t_3^4, \quad \text{if } x^2 + y^2 = 2u_3^2;$$

$$N = 2\,(u^2 \pm a^2)^2 - a^4 = (2u^2 \pm a^2)^2 - 2u^4.$$

All such forms furnish sufficient (but not necessary) criteria of solvability.

Here follow criteria* of insolubility of some generality, also sufficient (but not necessary).

Since N is odd, t is always odd; so that $t^2 = 8i + 1$, $t^4 = 16i' + 1$. If possible, let $N_1 = 16n + 7$, $N_4 = 16n + 9$; and take residues to mod 16. Then

$$N_1 = 1 - 2u_1^2 \equiv 7 \quad \text{and} \quad N_4 = 2u_4^2 - 1 \equiv 9 \pmod{16}.$$

Hence $\quad 2u_1^2 \equiv -6 \equiv +10$ and $2u_4^2 \equiv +10 \pmod{16}$.

And $\quad u_1^2 \equiv +5$ and $u_4^2 \equiv +5 \pmod 8$, both *impossible*.

Thus $\quad N = 16n + 7 \not\equiv N_1 \quad \ldots\ldots (A)$

and $\quad N = 16n + 9 \not\equiv N_4 \quad \ldots\ldots (B).$

Next, let $\quad N = a^2 + (4b)^2 = t_1^4 - 2u_1^2$, with b *odd* (if possible).

Here N (being odd) requires a, t_1 odd, and b is given odd.

Then $\quad t_1^4 - 16b^2 = a^2 + 2u_1^2$ and $(t_1^2 + 4b)\,(t_1^2 - 4b) = a^2 + 2u_1^2$.

Hence $\quad t_1^2 - 4b = a'^2 + 2u'^2$, where $t_1^2 = 8\tau + 1$, $b = 2\beta + 1$.

Hence $\quad a'^2 + 2u'^2 = (8\tau + 1) - 4\,(2\beta + 1) \equiv -3 \pmod 8$ [*impossible*].

Hence $\quad N = a^2 + (4b)^2 \not\equiv N_1$, with b odd $\ldots\ldots (C).$

Again, let $\quad N = c^2 + 2\,(2d)^2 = 2u_3^4 - t_3^2$, with d *odd* (if possible).

Here N (being odd) requires c, t_3 odd, and d is given odd.

Then $\quad 2\,(u_3^4 - 4d^2) = c^2 + t_3^2 = (8\gamma + 1) + (8\tau + 1).$

Here $\quad (u_3^2 + 2d)\,(u_3^2 - 2d) = \tfrac{1}{2}\,(c^2 + t_3^2) = c'^2 + t'^2$, an *odd* number.

Hence $\quad u_3$ is *odd*, and $u_3^2 + 2d = c'^2 + t'^2$ should $= 4m + 1$ }
But $\quad u_3^2 + 2d = (8v + 1) + 2\,(2\delta + 1) = 4m' + 3$ }.

Hence $\quad N_3 = c^2 + 2\,(2d)^2 \not\equiv N_3$, with d odd $\ldots\ldots (D).$

Other criteria may be obtained by taking residues to moduli 10^2, 10^3, 10^4. In two cases 10^4 may be used usefully with N_2, N_3. Thus—

Let $\quad N_2 = t_2^2 - 2u_2^4 \equiv 01, 21, 41, 61, 81 \pmod{100}.$

This is easily shown to involve $u_2 = 10v$, $u_2^4 \equiv 10^4 v^4$.

Hence $\quad t_2^2 \equiv N \pmod{2.10^4}$ and $f_r = u_2^2 \quad \ldots\ldots (E).$

Again, let $\quad N_3 = 2u_3^4 - t_3^2 \equiv 19, 39, 59, 79, 99 \pmod{100}.$

This is easily shown to involve $u_3 = 10v$, $u_3^4 \equiv 10^4 v^4$.

Hence $\quad t_3^2 \equiv -N \pmod{2.10^4}$ and $f_r' = u_3^2 \quad \ldots\ldots (F).$

The two results (E), (F) greatly limit the possible forms of t, u. To apply these tests the successive solutions of $N = (e_r^2 - 2f_r^2).(1)^r$ should be calculated, or rather the residues of the successive e_r, f_r to mod 10^2, 10^3, &c.

After a certain number of steps the residues will recur, and it may thus appear that (E), (F) cannot be satisfied. This process is laborious, as the period of recurrence may be very long.

The four criteria (A, B, C, D) above show that most of the gaps left in the table of (t, u) in the author's solution of Question 16135 were really *impossible* cases. Thus—

By (A), $N_1 \not\equiv 7, 23, 71, 103, 151, 167, 199, 263, 311, 359, 439, 487$;

By (B), $N_4 \not\equiv 41, 73, 89, 137, 233, 281, 313, 409, 457$;

By (C), $N_1 \not\equiv 17, 41, 97, 137, 193, 241, 313, 401, 409, 433, 449, 457$;

By (D), $N_3 \not\equiv 17, 73, 89, 97, 193, 233, 241, 281, 401, 433, 449.$

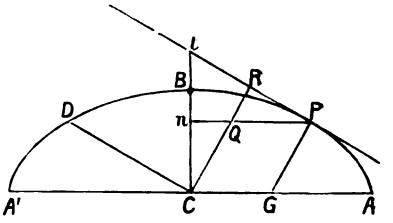
The writer has extended the table of Question 16135 to $p > 1000$ without finding any case of N in all four forms (N, ... N_4).

In the Proposer's two examples N = 241, 281 two cases of each are excluded above. The application of criterion (E) will be found extremely laborious.

** Partly suggested by some investigations of the Proposer.*

The Pedal of an Ellipse with respect to its Centre.

By R. F. DAVIS, M.A.



Let Pt, PG be the tangent and normal at any point P of an ellipse whose axes are ACA', BCB'. Draw CR perpendicular to Pt; and let a parallel to the major axis through P meet CR, Ct in Q, n respectively. Since

$$CQ = PG = (b/a).CD,$$

the locus of Q is the locus of D turned through a right angle and its linear dimensions diminished in ratio $b : a$; that is to say, a definite ellipse.

Since $CQ.CR = Cn.Ct = CB^2$, therefore the locus of R is the inverse of this ellipse.

16700. (G. N. WATSON, B.A.)—Prove that

$$\tfrac{1}{2}(n+1)\,[2^{n+1} + 2 + 3^n] = 3^{n+1} + {}_{n+1}C_2.B_1.3^{n-1} - {}_{n+1}C_4.B_2.3^{n-3} + {}_{n+1}C_6.B_3.3^{n-5} - \ldots,$$

where $B_1, B_2, \ldots$ denote Bernoulli's numbers.

Solution by W. E. H. BERWICK.

By definition, when $|x| < 2\pi$,

$$\frac{x}{1 - \exp(-x)} = 1 + \tfrac{1}{2}x + \frac{B_1}{2!}x^2 - \frac{B_2}{4!}x^4 + \frac{B_3}{6!}x^6 - \ldots;$$

further, $\quad \dfrac{\exp(3x) - 1}{1 - \exp(-x)} = \exp(x) + \exp(2x) + \exp(3x).$

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Hence $x[\exp(x)+\exp(2x)+\exp(3x)]$

$$= [\exp(3x)-1]\left(1+\tfrac{1}{2}x+\frac{B_1}{2!}x^2-\frac{B_2}{4!}x^4+\frac{B_3}{6!}x^6-\dots\right),$$

i.e., $x\left(3+x(1+2+3)+\dots+\frac{x^n}{n!}(1^n+2^n+3^n)+\dots\right)$

$$=\left(3x+\frac{3^2x^2}{2!}+\frac{3^3x^3}{3!}+\frac{3^4x^4}{4!}+\dots\right)\left(1+\tfrac{1}{2}x+\frac{B_1}{2!}x^2-\frac{B_2}{4!}x^4+\dots\right).$$

Since each series on the right converges absolutely when $|x|<2\pi$, we can expand the product in a power series, valid when $|x|<2\pi$, and since this series and the series on the left are then each absolutely convergent, it is legitimate to equate coefficients of various powers of x.

Comparing coefficients of x^{n+1},

$$\frac{1}{n!}(1^n+2^n+3^n)=\frac{3^{n+1}}{(n+1)!}+\tfrac{1}{2}\frac{3^n}{n!}+\frac{B_1}{2!}\frac{3^{n-1}}{(n-1)!}-\frac{B_2}{4!}\frac{3^{n-3}}{(n-3)!}+\dots.$$

Hence

$$(n+1)(1+2^n+3^n)$$
$$=3^{n+1}+\tfrac{1}{2}(n+1)3^n+B_1\,{}_{.n+1}C_2.3^{n-1}-B_2\,{}_{.n+1}C_4.3^{n-3}+\dots.$$

Rearranging, we see that

$$\tfrac{1}{2}(n+1)(2+2^{n+1}+3^n)=3^{n+1}+B_1\,{}_{.n+1}C_2.3^{n-1}-B_2\,{}_{.n+1}C_4.3^{n-3}+\dots.$$

16435. (Professor Sanjána, M.A.)—The Brocard points of a triangle are known, and the value of the Brocard angle (which is fixed) is known to be half of that of one angle of the triangle (say B). Prove that the angular points of the triangle move on fixed straight lines, and show how to construct it.

Solution by C. E. Youngman, M.A.

Given Ω, Ω' the Brocard points; both lie on the bisector of B, since the Brocard angle $\omega=\frac{1}{2}B$; thus B lies on $\Omega\Omega'$.

Find the circum-centre O, equidistant from Ω and Ω', with $\Omega O\Omega'=2\omega$; and draw ΩT touching the circle $O\Omega\Omega'$ to meet $O\Omega'$ at T. Then the vertex A must lie on ΩT, because angle

$$A\Omega B=\pi-B=\pi-2\omega;$$

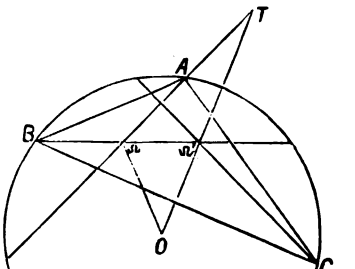
and C on the corresponding tangent at Ω'. Also angle

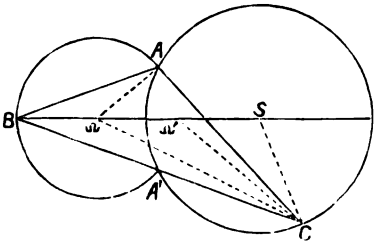
$$OA\Omega'=90^\circ-B-\omega$$
$$=90^\circ-3\omega=\Omega T\Omega';$$

therefore OA touches the circle $AT\Omega'$, and

$$OA^2=O\Omega'.OT.$$

Thus the circum-circle can now be drawn, determining ABC.





Suppose the Brocard angle not given, but varying; then there will be a locus for A and C. A simple construction is: assume B anywhere in $\Omega\Omega'$, and S such that $\Omega S=B\Omega'$; with centre S draw a circle coaxal with the points Ω and Ω', and with centre Ω, radius ΩB, cut this circle at A, A'; and draw BA' to cut the circle again at C. Then the angle $ASC=2AA'B=\pi-ABC$; therefore ABCS are concyclic, and $SCA=SBA=SBC$; but since $SC^2=S\Omega.S\Omega'$ the circle $C\Omega\Omega'$ touches SC, and $SC\Omega=S\Omega'C=2SBC$; therefore $\Omega CA=SBC$. Thus $\Omega AB=\Omega BC=\Omega CA$; and similarly $\Omega'AC=\Omega'CB=\Omega'BA$; so that Ω and Ω' are the Brocard points of ABC.

If we put $\Omega A=r$, $S\Omega A=\theta$, and $\Omega\Omega'=d$, the triangle $S\Omega A$ gives

$$r(r+d)=r^2+(r+d)^2-2r(r+d)\cos\theta;$$

i.e.,

$$r(r+d)(2\cos\theta-1)=d^2;$$

which indicates a quartic curve as the locus of A and C. When A lies in ΩS, we have $r(r+d)=d^2$, *i.e.*, $r^2=d(d-r)$; therefore A divides $\Omega\Omega'$ in medial section.

16690. (S. G. Soal.)—Show that the three vertices of a triangle, its circum-centre, orthocentre, symmedian point, and the isogonal conjugate of its nine-point centre are seven points on a conic.

Solution by Professor Sanjána, M.A.

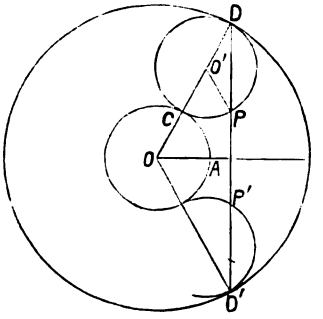
The equation of the circum-conic which goes through the circum-centre and orthocentre is $\Sigma\sin A\cos A\sin(B-C)/\alpha=0$. The points whose trilinear co-ordinates are $\sin A$, $\sin B$, $\sin C$ and $1/\cos(B-C)$, $1/\cos(C-A)$, $1/\cos(A-B)$ evidently satisfy this equation.

10230 & 16648. (10230.)—(Professor Morley.)—In the cardioide let parallel tangents touch at P, Q, R; then we know (Chasles' theorem) that the mean centre of PQR is fixed, being in fact the triple focus. Show that (1) QR, RP, PQ subtend equal angles at the cusp (this point in a triangle might be called isoptic centre); (2) PQR is of constant area; (3) the concentric ellipse through PQR is of given axes; (4) the tangents meet the concentric circle through the vertex in two equilateral triangles; (5) from the corners of one of these triangles draw the other six tangents—these meet the circle again at a regular hexagon, the twelve new tangents from these points meet at a regular 12-gon, and so on; (6) the sum of the common tangents drawn to two equal concentric cardioides is zero; (7) the sum of the radii of curvature at P, Q, R is zero; (8) the loci of orthocentre, circum-centre, nine-point centre of PQR are circles; (9) the locus of intersection of perpendicular tangents or normals to a cardioide is a circle and a limaçon. [Much of this holds good also for any epicycloid.]

(16648.)—(M. T. Naraniengar, M.A.)—If the tangents at P, Q, R of a cardioide are parallel, show that (i.) $\Sigma(SP^2)$ = constant, (ii.) the centre of gravity of PQR lies on the axis of the cardioide and is fixed, (iii.) $(PQ^2+QR^2+RP^2)$ is constant.

Solutions by G. N. Bates.

(10230.) Let O and O' be centres of fixed and rolling circles radius a, A the cusp of the cardioide.



Using circular co-ordinates with OA as axis of reals, the co-ordinates of P a point on cardioide are

$$x=2at-at^2;\quad y=2a/t-a/t^2.$$

In the figure PD is the tangent at P; let E and F be points on the rolling circle such that QE and RF, the tangents at Q and R to the cardioide, are parallel to PD.

The equation of the tangent at P is

$$x-t^3y=3at(1-t);$$

therefore the x co-ordinates of Q and R are $2a\omega t-a\omega^2t^2$ and $2a\omega^2t-a\omega t^2$ respectively; $\omega^3=1$ and OD, OE, OF make equal angles with one another and therefore sides of PQR subtend equal angles at A ..... (i.)

PQR is a maximum inscribed triangle of the ellipse centre O axes $3a$ and a parallel to DP and CP; its area is therefore constant and equal to $9a^2\sqrt{3}/4$ ..... (ii.) and (iii.)

The tangent $x-t^3y=3at(1-t)$ meets the circle $x=3at$ in the points $x=3at$ and $3at^2$.

The set of six points have their x co-ordinates $3at$, $3a\omega t$, $3a\omega^2t$, $3at^2$, $3a\omega t^2$, $3a\omega^2t^2$, and form two equilateral triangles ..... (iv.)

The tangent $x-T^3y=3aT(1-T)$ passes through the point $x=3at$ if $t-T^3/t=T(1-T)$ a cubic for T whose roots are t; $\iota\sqrt{t}$ and $-\iota\sqrt{t}$. $\iota^2=-1$.

The six tangents obtained in this way from one of the equilateral triangles meet the circle $x=3at$ in a regular hexagon, and so on ... (v.)

If the tangent DP meet the circle $x=3at$ in D' and cut in P' the rolling circle whose point of contact with $x=3at$ is D', P'D' will touch an equal concentric cardioide in P', and

$$PP'=2a\cos\tfrac{1}{2}\theta \text{ where } \cos\theta+\iota\sin\theta=t;$$

therefore

$$\Sigma PP'=0 \quad \text{..... (vi.)}$$

The centre of curvature at P is

$$x=\tfrac{2}{3}at+\tfrac{1}{3}at^2,\quad y=2a/3t+a/3t^2;$$

therefore

$$\rho^2=-16a^2/9t(t-1)^2;$$

therefore

$$\Sigma\rho=0 \quad \text{..... (vi.)}$$

The centre of the circum-circle of triangle PQR is

$$x=-4a/3-2at^3/3,\quad y=-4a/3-2a/3t^3,$$

and its locus is therefore the circle

$$(x+4a/3)(y+4a/3)=4a^2/9.$$

The loci of orthocentre and nine-point circle are also circles ... (viii.)

The equation $t^3y-3at^2+3at-x=0$ gives the t's of the three tangents through (x, y).

For two tangents to be at right angles two roots of this equation must be connected by the relation $t_1^3+t_2^3=0$.

Forming the equation whose roots are the cubes of the roots of the above equation we have

$$t^3-3t^2(xy^2-9a^2y+9a^3)+3t(x^2y-9a^2x+9a^3)+x^3=0;$$

therefore orthoptic locus is

$$9(xy^2-9a^2y+9a^3)(x^2y-9a^2x+9a^3)=x^3y^3$$

which reduces to

$$(xy-9a^2)\{9xy+81a^3(x+y)+81a^3(x+y-a)\}=0,$$

a circle and a quartic curve which has a double point on the real axis

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at $x = 3a/2$ transfer the origin to this point, and, changing to polars, the curve is found to be the limaçon

$$r = 3\sqrt{3}/2a - 3a\cos\theta.$$

Dealing in the same way with the normal, the locus of point of intersection of two normals at right angles is the circle $xy = a^2$ and the limaçon $4r = 4a\cos\theta + 2a\sqrt{3}$ (the origin being $x = -\frac{1}{2}a$).

(16648.) With the above notation

$$AP^2 = (a - 2at + at^2)(a - 2a/t + a/t^2) = a^2\{t^{-2} - 4t^{-1} + 6 - 4t + t^2\};$$

therefore $$\Sigma AP^2 = 18a^2 \quad \text{..... (i.)}$$

The centre of gravity of PQR is at O, *i.e.* O is the centre of the cardioide ... . (ii.)

$$QR^2 = (2a\omega t - a\omega^2 t^2 - 2a\omega^2 t + a\omega t^2)(2a\omega^2/t - a\omega/t^2 - 2a\omega/t + a\omega^2/t^2)$$
$$= -a^2\omega^2(1-\omega)^2/t\{2 + 5t + 2t^2\} = 3a^2/t\{2 + 5t - 2t^2\};$$

therefore $$\Sigma QR^2 = 45a^2 \quad \text{.....(iii.).}$$

Factorization an Aid to the Solution of Biquadratic Equations.

By D. Biddle.

The equation being reduced to the form

$$x^4 + qx^2 + rx + s = 0 \quad \text{.....(1),}$$

the usual method, that of Descartes, assumes

$$(1) = (x^2 + kx + l)(x^2 - kx + m) = 0 \quad \text{..... .....(2),}$$

whence a cubic in k^2 can be found, and a solution of (1) be effected.

The present method consists in assuming

$$(1) = (x^2 + l)^2 - (kx + m)^2 = 0 \quad \text{.....(3),}$$

whence $$x^2 + l = \pm(kx + m) \quad \text{.....(4),}$$

a simple quadratic, or, rather, two simple quadratics, yielding the four roots required. Comparing (3) with (1), we have

$$l^2 - m^2 = s, \quad -2km = r, \quad 2l - k^2 = q \quad \text{.....(5, 6, 7),}$$

and, by addition, $$(l+1)^2 - (k+m)^2 = s + r + q + 1 \quad \text{.....(8).}$$

It is best to begin by inspecting (6), which often at once indicates the alternative values of k, m. Inspection of (5) and (7) in succession, by aid of the results of (6), will enable us in many cases to fill in (4) without further labour. Thus, taking all the instances of biquadratics reduced to the form of (1), in Hall and Knight's *Higher Algebra*, pp. 485, 488, solutions can be effected with the greatest readiness.

They are as follows:—

(i.) $$x^4 - 2x^2 + 8x - 3 = 0.$$

This is the example given on p. 485, to show the working of Descartes' method. By the present method, seeing $r = +8$, we find k, $m = 2$, -2 respectively, and seeing $s = -3$, we find $l^2 = 1$; also, since

$$q = -2 = 2l - k^2 = 2l - 4;$$

therefore $l = +1$. Consequently $x^2 + 1 = \pm(2x - 2)$, whence we obtain

$$x = -1 \pm \sqrt{2}, \quad 1 \pm \sqrt{(-2)}.$$

(ii.) Ex. 9, p. 488, $x^4 - 3x^2 - 42x - 40 = 0.$

Here $r = -42$; therefore $k, m = 3, 7$; $s = -40 = l^2 - m^2 = l^2 - 49$, and $l^2 = 9$; also, by (7), $(q = -3)$, $l = +3$. Hence $x^2 + 3 = \pm(3x + 7)$, whence $x = 4, \ -1, \ -\frac{1}{2}[3 \pm \sqrt{(-31)}]$.

(iii.) Ex. 10, p. 488, $x^4 - 10x^2 - 20x - 16 = 0.$

Here $r = -20$; therefore k, $m = 2$, 5; $s = -16 = l^2 - m^2 = l^2 - 25$, and $l^2 = 9$; also, by (7), $(q = -10)$, $l = -3$, and we have

$$x^2 - 3 = \pm(2x + 5),$$

whence $$x = 4, \ -2, \ -1 \pm \sqrt{(-1)}.$$

(iv.) Ex. 13, p. 488, $x^4 - 3x^2 - 6x - 2 = 0.$

This is slightly more difficult, owing to $s = -2$. But let $s = (\frac{1}{2})^2 - (\frac{3}{2})^2$. Then $r = -6$ yields $k = 2$, $m = +\frac{3}{2}$, and $q = -3$, $= 2l - 4$, yields $l = +\frac{1}{2}$, and we have $x^2 + \frac{1}{2} = \pm(2x + \frac{3}{2})$, whence

$$x = 1 \pm \sqrt{2}, \quad -1 \pm \sqrt{(-1)}.$$

[Rest in *Reprint*.]

QUESTIONS FOR SOLUTION.

16733. (Professor Morley. Suggested by Question 11352.)—A watch spring is in the form of a closed circle of diameter $2r$. It is compressed at the ends of a diameter until the curvature at these points is zero. If the greatest diameter be now $2a$, and the least be $2b$, prove that $2br = a^2$.

16734. (H. MacColl, B.A.)—If the chance that the hypothesis A true, assuming the hypothesis B, be equal to the chance that the hypothesis B is false, assuming that A is false; show that either B implies A, or else the chance that A is true (assuming no hypothesis beyond our admitted data) is equal to the chance that B is false.

16735. (C. M. Ross, B.A.)—Having given that

$$y_1 = \frac{x_2 x_3 \ldots x_n}{x_1}, \quad y_2 = \frac{x_3 x_4 \ldots x_1}{x_2}, \quad \ldots, \quad y_n = \frac{x_1 x_2 \ldots x_{n-1}}{x_n},$$

prove that the value of the Jacobian of $y_1, y_2, \ldots, y_n$ is

$$(-1)^{n-1}(n-2)\,2^{n-1}(x_1 x_2 \ldots x_n)^{n-3}.$$

16736. (Lt.-Col. Allan Cunningham, R.E. Suggested by Question 16664.)—Find a number of sets of three numbers L, M, N, such that N = L.M, wherein L, M, N contain l, m, n digits respectively, and N contains all the digits of L and M, and no more, so that $n = l + m$. (Sets produced by the mere addition of ciphers to a given set L, M, N should be *excluded*.)

16737. (Professor Sanjána, M.A.)—Prove that numbers of the form $X^6 + Y^6$ can be resolved into three factors when

X = 5, 121, 3597, 107761, ..., and Y = 3, 119, 3595, 107759, ...

Resolve completely

$N_2 = 121^6 + 119^6$, $N_3 = 3597^6 + 3595^6$, and $N_4 = 107761^6 + 107759^6$.

16738. (M. Kannan, B.A., L.T.)—If N is an integer such that $\frac{1}{5}(N^2 + 1)$ is a perfect square, then

$$N = {}_{2n+1}C_1 . 5^n . 2 + {}_{2n+1}C_3 . 5^{n-1} . 2^3 + {}_{2n+1}C_5 . 5^{n-2} . 2^5 + \ldots,$$

where n is zero or any positive integer.

16739. (F. G. W. Brown, B.Sc., L.C.P.)—Solve simultaneously for x, y, z, w the equations $x + z = a$, $w + xz + y = b$, $xw + yz = c$, $yw = d$. Test the solution when $a = 3$, $b = 9$, $c = 11$, $d = 12$.

16740. (C. E. Youngman, M.A.)—A circle (Z), used for tracing out a cardioid of cusp S and vertex V, rolls on an equal circle (O), touching it at A, B, C successively, to which correspond P, Q, R on the cardioid —these being such that the circle PQR is itself a fourth position of (Z), touching (O) at D and having diameter DZD'. Then (1)

$$SP + SQ + SR = 2SO;$$

(2) triangles ABC, PQR are congruent; (3) O is the orthocentre of PQR; (4) the projections of O on the six tangents at PQR lie on VD'; (5) QR cuts the curve again at points p, p', where the tangents are parallel to AP; (6) the six such points p, p', q, q', r, r' lie on a conic ($e^2 = \frac{4}{3}$), having S for vertex and SD for axis; (7) this conic envelopes a bicircular quartic, inverse to a parabola.

16741. (Professor H. Langhorne Orchard, M.A., B.Sc.)—Find the volume of the maximum *parallelepipedon* inscribable in the sphere $x^2 + y^2 + z^2 = 3$.

16742. (Professor Neuberg.)—On considère les hyperboles équilatères qui passent par les extrémités du grand axe d'une ellipse et touchent cette courbe. Trouver le lieu des centres.

16743. (Professor Nanson.)—Given three points on a conic and the locus of the focus, find the envelope of the directrix.

16744. (M. T. Naraniengar, M.A.)—Construct an ellipse being given the auxiliary circle and two points on the ellipse.

16745. (Professor V. Ramaswami Aiyar, M.A.)—ABC is a triangle inscribed in a conic X of focus S and directrix LL'. AA', BB' are the major and minor axes, and PP' a chord parallel to either axis, of X. Let Y be a conic self-conjugate with respect to the triangle ABC. (1) If Y touch LL', prove that its director circle will pass through S. (2) If it touch AA' or BB', then the director circle of Y cuts the corresponding auxiliary circle of X orthogonally. (3) If it touch PP', then its director circle cuts orthogonally the circle having double contact with X, such that PP' is the chord of contact. (4) Consider the case when X is a circle.

16746. (Major C. H. Chepmell, late R.A.)—Given two sides of unequal length, construct (by ruler and compasses) a triangle which shall have the angle included between the two given sides four times the angle opposite the greater.

16747. (I. Arnold.)—Through a given point P draw a line bisecting a triangle: (1) when the point P is inside the triangle, and (2) when the point P is outside the triangle, and by the first book of Euclid.

16748. (Professor E. Hernández.)—Dans tout triangle ABC, on a

(1) $r(1/r_a r_b + 1/r_b r_c + 1/r_c r_a) = 4(r_a + r_b + r_c)/(a + b + c)^2$,

(2) $p^2 r = r_a r_b r_c$,

(3) $(ab + bc + ca)/r r_a r_b r_c = 1/r^2 + 1/r_a r_b + 1/r_b r_c + 1/r_c r_a$,

r étant le rayon du cercle inscrit et r_a le rayon du cercle ex-inscrit qui touche directement le côté a, et de même pour r_b et r_c.

16749. (A. M. Nesbitt, M.A.)—S is a point on a circle of which POP', QOQ' are any two diameters; and α, β are the images of S in these diameters. If α, β cut PQ in Y, and Z be the image of O in P'Q', then the angle YSZ is a right angle. (By pure geometry if possible.)

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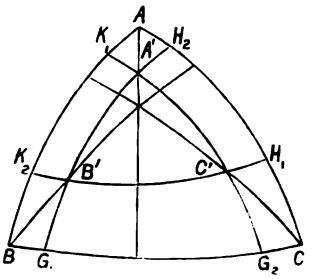
16750. (Sonti V. Ramamurty, B.A.)—The sides of a spherical triangle ABC are cut by those of its polar triangle A'B'C' in the points G_1, G_2: H_1, H_2; K_1, K_2, as shown in figure. Show that the triangle formed by K_2G_1, G_2H_1, H_2K_1 has its vertices on the altitudes of the triangle ABC.



OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10673. (D. Biddle.)—At a spot where the surface of the earth is at mean distance from the centre, is the mouth of a disused vertical shaft, at the bottom of which is water. A stone is dropped in and in $16\frac{1}{2}$ seconds a splash is heard. Assuming that, by reason of the confinement of the air, sound travels at the rate of $(1130+mx)$ ft. per second at any depth x in the shaft, find the level of the water. [See *Reprint*, Vol. LII., pp. 37 and 38.]

10698. (Professor Wolstenholme, M.A., Sc.D.)—In a trinodal quartic (A, B, C nodes), tangents are drawn to the curve from a point P on the curve. Prove that their points of contact lie on a straight line which may be constructed as follows:—Join PA meeting the curve again in Q; join QB, QC meeting CA, AB in L, M; then LM will be the straight line required. [This will be the locus of the points of contact of tangents drawn from P to any quartic having nodes at A, B, C, and passing through P—a singly infinite system.]

11267. (Professor Chakrivarti.)—If α, β, γ and α', β', γ' are the roots of the cubics $x^3-px^2+qx-r=0$ and $x^3-p'x^2+q'x-r'=0$; show that, if Δ, Δ' are the discriminants of the two cubics, the equation whose roots are $\alpha\alpha', \beta\beta', \gamma\gamma'$ is

$$(x-\tfrac{1}{3}pp')^3-\tfrac{1}{3}(x-\tfrac{1}{3}pp')(p^2-3q)(p'^2-3q')=\frac{1}{216}\begin{vmatrix}\partial\Delta & \partial\Delta'\\ \partial r & \partial r'\end{vmatrix}\pm\tfrac{1}{2}(\Delta\Delta')^{\frac{1}{2}}.$$

11816. (D. Edwardes, B.A.)—If

$$cx/r^2=\cosh\eta\cos\xi,\quad cy/r^2=\sinh\eta\sin\xi.$$

and if the cylinder $\eta=\alpha$ be filled with viscous liquid and rotate about its axis with slow angular velocity ω, prove that, if there is no slipping at the surface, a steady motion of the liquid will be given by the current function

$$\psi=\frac{ac^2(\sinh 2\eta-2\eta\cosh 2\alpha)}{(2\alpha\cosh 2\alpha-\sinh 2\alpha)(\cosh 2\eta+\cos 2\xi)}.$$

11876. (H. J. Woodall, A.R.C.S.)—Investigate the arrangements of n quantities $(a_1, a_2, \ldots a_n)$ in a row, so that the difference between two consecutive suffixes is (1) not less than k, (2) not greater than k.

11897. (Professor Beyens.)—A white ball has been drawn from an urn three times running, the proportion of white to black balls being absolutely unknown beforehand. Investigate the chance of the next drawn being white, and the presumption that a majority of the balls are white.

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The Educational Times.

Religion in Schools of the Future.

PROF. MICHAEL SADLER is a bold man who has the courage of his opinions. Our educational pundits, as a rule, fight shy of the subject of religious teaching, and either ignore it altogether or dismiss it in a few non-committal platitudes at the end of their orations or treatises. Thus, in what is still the most popular work on the art of teaching, Sir Joshua Fitch apologizes for saying nothing of religious and moral instruction on the plea that it is impossible to co-ordinate it with the secular subject on which he has been discoursing. He proceeds to state very fairly the contending views as to the functions of a school in this matter—the view that right moral guidance can only be had by direct didactic teaching of theological truths, and the view that religious principles are better learned indirectly and should permeate the whole corporate life of a school—and he refuses to pronounce an opinion on "a question that divides some of our most religious and high-minded teachers."

We turn from "Lectures on Teaching" to the most recent work on pedagogics, Mr. Lyttelton's "Schoolboys and School Work"; and we read, in the preface by Dr. Burge, "It goes without saying that we take for granted a systematic course of Bible study." To those who know our public schools this will seem a somewhat bold assumption, but this is not our point.

Prof. Sadler not only grasps his nettle, but (if we may be allowed the phrase) flings himself into the nettle-bed. As President of the Teachers' Guild, he chose as the subject of the address that he delivered last week "Teachers and the Religious Lesson." And he plunges into the thick of the fray. There is no beating about the bush; there are no platitudes about the high vocation and calling of the teacher, the religious atmosphere of a school, conduct which is three-fourths of life. He faces squarely the problem: what is, what ought to be, and what probably will be, the the position of religion in our national system of education.

No summary could do justice to the address, and we must refer our readers to the text, which is given in full in the current number of the *Teachers' Guild Quarterly*. We must be content, like impatient novel readers, to turn to the last chapter and see what is the upshot of it all. Prof. Sadler is "a prophet new-inspired," and he ventures on a bold forecast of English schools twenty years hence. No one has had such opportunities of studying the problem on all its sides, and, as far as present knowledge is concerned, the old saw which warns us not to prophesy unless we know does not apply to Prof. Sadler.

We may look, then, both for instruction and guidance in the prognostics of one who has the confidence both of Churchmen and of teachers and who, in recent legislation, has been consulted by both. With the caveat that these anticipations are avowedly in part aspirations, we will proceed to summarize Prof. Sadler's conclusions.

1. Secular education, in the full and accurate sense of the word, is a chimera and may be dismissed at starting.

2. Privileged secularism, as in France, is a remote possibility, but one greatly to be deprecated—not as fatal to religion, but as opposed to the national genius.

3. *Lehrfreiheit* will be universal—that is to say, the State will allow no religious tests of any sort or kind to be imposed on teachers in schools that it aids or supports.

4. In "single-school areas" the school will be wholly under the control of the Local Authority, but in "plural-school areas" schools under denominational control will be allowed. In both classes there must be identical educational tests and there must be no "contracting out."

5. In County Council schools pupils whose parents desire it will be allowed to receive denominational instruction in some place outside the school buildings. For other pupils, either the Local Authority may provide "Cowper-Temple" instruction, or, if it declines to do so, it must admit ministers of religion to give it.

6. Opportunity for such instruction must be given during the hours of obligatory school attendance, and teachers on the regular school staff should be free to give it. The latter point is distinguished as rather a hope than a prophecy.

7. In boarding schools the State, which stands *in loco parentis*, will be bound to make provision for religious instruction, and the Act of 1902 shows how this may be done, Sec. 4 (1).

What, it will be asked, will be the state of our great public schools, which are now a law unto themselves and go each its own way? Such schools, in Prof. Sadler's horo-

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scope, will virtually have ceased to exist. If for no other reason, a State system of contributory pensions will have compelled them to come in. This, indeed, is a blessed consummation, but we fear it is farther off than in Prof. Sadler's vision.

Lest we should lay ourselves open to the same charge of cautious neutrality that we brought against Sir Joshua Fitch, we may say in conclusion that, without committing ourselves to particulars, we can endorse generally Prof. Sadler's conclusions, and we may quote the opinion of Dr. Péron, a distinguished French publicist, who has just published a learned work on educational legislation in England:—

> For us Frenchmen, accustomed to the public school from which all references to religion are deliberately excluded, it is less easy to understand the repugnance of certain of our neighbours to admit Cowper-Templeism. Since it is recognized that the majority of the English nation is opposed to the idea of the "Godless school," it seems to us that a form of moral instruction on a religious and Christian basis ought to be of a nature to satisfy the requirements of even extreme sectarians. This is not a negative, but a positive and benevolent, neutrality with nothing destructive about it. Non-dogmatic Christian instruction is a preparation for specialized religious instruction, which the family, if it desires it, can impart or provide outside the school.

NOTES.

Sir Philip Magnus's Amendment to Clause 25 of the First Part of the Finance Bill was defeated by 122 votes—176 to 54. Sir Philip's strenuous argument was vigorously supported by Sir William Anson, Mr. Bonar Law, Sir Henry Craik, Mr. Butcher, Mr. Rawlinson, and Mr. Balfour, who represented forcibly the disastrous effects of the clause upon the Universities and the public schools. The contentions of the Chancellor of the Exchequer were singularly thin and crude. The institutions are not to pay so long as they "occupy and use" their land; but the moment they "sell or cease to occupy or use" it he is down upon them—just as if the proceeds would not any longer be applied to their purposes. "If we are going to except the Universities, how can we refuse to except the Ecclesiastical Commissioners and the great religious corporations?" And "if we begin to exempt the whole of these great ecclesiastical, religious, and charitable institutions from the whole of these taxes the land of England will more and more get into their hands." Yet, as Mr. Rawlinson pointed out, "in all the Mortmain Acts exemption is granted to the Universities and to certain public schools: a distinction has been drawn from time immemorial between them and religious bodies, and there is no reason why the same distinction should not hold good in this Bill." It is nothing less than preposterous that the gravely insufficient funds of these institutions should be taxed, even were the tax as light as Mr. Lloyd George asserts that it is, at a time when the Government is looked to for supplementary contributions. Mr. Butcher justly said:

> If all the surplus funds of the colleges derived from the increasing value in the developing lands went to the University, the University's needs would still be unsatisfied. The Government were taking away money from the Universities at a time when they were making great appeals to the public for £250,000 in order to enlarge the scope of their studies and equip the Universities with the very costly scientific plant necessary for research and to enable the Universities to keep pace with the enlarging science of the day. Both Universities had schemes for giving a cheaper education to the poor man, and, in proportion as the Chancellor of the Exchequer put on these taxes, so he would make it impossible to carry out these schemes. The Universities asked to be allowed to keep their own endowments at a moment when they were straining every nerve to keep their equipment up to the ideal desired. From the point of view of material prosperity of the country, the work done in our Universities was worth hundreds of thousands a year more than all these taxes put together, and did it not seem a cruel, short-sighted, and Philistine thing to cripple the Universities at the very moment they were doing their utmost to extend the teaching of science?

It is, indeed, "a cruel, short-sighted, and Philistine thing."

Prof. Osler seems always to make a stir among the dry bones when he gets on a public platform, and it is an excellent characteristic. In opening the new laboratories for chemistry, physics, and physiology at the London Hospital the other day, he not only prodded the students with vigour, but boldly bearded both the Vice-Chancellor and the Principal of the University of London. "You young men," he said, "cannot spend too long in the laboratories"; "each man must take his laboratory methods with him into practice"; "I should like every student to undertake a small piece of research work." This is sound advice, and it is advice that should be laid to heart in many other departments besides medicine, the term "laboratory" being capable of a far wider application in our studies than is technically attached to it. "But you say that research work will not help you in your examinations: I tell you to take no thought for your examinations." Here is a very hard saying, especially to candidates for London University medical degrees. But on this point the challenge was really addressed to the University, which can make the examinations (especially the matriculation examination) more reasonable, and to take due account of research work. It is much too sweeping, as the Vice-Chancellor sturdily maintained, to allege that "the University, the hospitals, and the colleges have all failed the student"; but Dr. Osler's denunciation of "the scandalous injustice that the London student cannot, after a good honest examination, get a good honest degree" was urgently needed. "The Conjoint Examination," he justly pointed out, "is as good a test as those of Oxford, Cambridge, and the Scottish and Irish Universities—some say a better." For the vast majority of practitioners, undoubtedly a better. Dr. Osler's recommendation of a constitutional agitation for "a good M.D. degree" from the University was most opportune. The *Medical Times* calls attention to "the serious plight of the London medical schools"; and the Dean of the Charing Cross Medical School, who devoted his opening address to the subject, said "this was a matter of grave, even vital, interest to the existence of the London medical schools, and he was quite sure, if the public could only appreciate what it meant, a lively and profitable interest in this most important matter would be taken." The weight of Dr. Osler's authority may be expected to forward materially a rational reform.

Sir Isambard Owen, in a luminous inaugural address, as Vice-Chancellor of the University of Bristol, differentiated sharply living and dead knowledge. In this country, he said, we are "somewhat apt to estimate Universities according to their lists of classes and honours, or according to the number of graduates they annually put forth." Elsewhere—in America, for example—"they have another way of esti-

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mating the importance of a University: Americans estimate it according to the proportion of its students who desire to pursue their studies further after they have taken their interim degree." This, he thinks, is the wiser view—wiser, because based on living knowledge, inspiring interest and a desire to understand the matter thoroughly, and to extend existing boundaries. "If a University insists too much on the importance of its examinations, if it teaches its students to look forward too much to the examinations and too little to the necessities of their after-life, then a great deal of the knowledge gained in the University is likely to become of the dead kind." Undoubtedly; and the thing is, not to run down examinations, but to adjust them to the best conditions of study. Dr. Osler's demand for a piece of research is thoroughly right; but, of course, it should be under the supervision of higher knowledge, and in due co-ordination with the general studies. As for research in the deeper sense, Sir Isambard said:

> No man can be relied upon to keep himself fully familiar with the confines of a progressive subject unless he is actually engaged in work upon these confines Nor can a man be regarded as fully capable of teaching the methods of a science unless he is actually engaged in the practical use of those methods. The work of research, the seeking for knowledge, is arduous, uphill, and often thankless work. To carry on that work demands some enthusiasm and zeal; it demands some self-denial.

It is very well to encourage post-graduate work in research, but it is becoming more and more clear that professors that have shown themselves capable of, and devoted to, research should be relieved considerably from the engrossments of actual teaching, and have at least a living wage.

The new "John Morley Chemical Laboratories" of Manchester University were appropriately opened by the Chancellor—the American Ambassador for the nonce called him Lord Chancellor—Viscount Morley. Yet, "whatever else I may be," said Lord Morley, "I should certainly not be at home in the work of a chemical laboratory." He was more at home in his opening speech, where he proposed "a paper for examination," consisting of the question "What is an educated man?"—a question that he essayed to answer in part. "I think I should put it at the very top of all qualifications of educated men and women that he or she should know what is evidence—when a thing is proved, and when it is not." The list of passes in such an examination would be singularly select and not a little interesting; and Lord Morley's suggestion that in an early "appeal to the people" we shall have an opportunity "of testing both the strength and the power on the one hand and the infirmities on the other of the human intellect" is probably the grimmest stroke of humour he has ever perpetrated. What does he think of the uniform results of the voting in the University constituencies, where every voter is presumably "an educated man"? He did indeed say that his test "is one neglected aspect of education." There was a time, however, when it was by no means neglected: Sir Isambard Owen recalled at Bristol that "the main object of medieval education was to teach a man to argue." It may be doubted whether the results satisfy Lord Morley's expectations. Probably there are—and ever will be—in the human mind influences that powerfully deflect the operations of pure logic.

Though "Manchester has not yet taken the place in the world's sphere of Athens, of Florence, of Geneva, or of great Rome," still she "has proved herself from a very early period of her growth a fit capital of a great community in an industrial and scientific age"; and "there is nothing," said Lord Morley, "of which Manchester is more proud than of the efficiency and prosperity of her University." Fortunately, Sir Henry Roscoe, whose appointment to the Professorship of Chemistry dates back fifty-two years, was there to signalize simply and impressively the remarkable change in the Manchester attitude. He said this:

> I am the last of the old guard who, in the year of grace 1857, served on the staff of the College and set themselves doggedly to overcome the prejudice and want of appreciation which was shown not only by the people of Manchester, but also by the whole of the Press. It was indeed then a poor affair; we had thirty-five students in all, of whom fifteen worked in my laboratory. The thing was, in fact, going spark out. Manchester did not want a University college; it would be much better to limit our hopes to being a superior school. I was standing one night at the back door of the old building in Quay Street smoking a cigar before my evening lecture when a tramp came up to ask if this was the night asylum. I told him it was not so at present, but that if he called again in six months it might be.
>
> Think of the progress which we have made in the last fifty years. It reads almost like a fairy tale in the pages of its history written by my dear friend Joseph Thompson, who has just passed away from among us. It is the greatest example of rapid progress of higher education which this country has ever seen. It is not only in one branch of intellectual activity that our University is conspicuous, but in all branches, and this is its most remarkable characteristic. It is not a mere school of science, though each of its science departments may well challenge comparison with similar institutes in other Universities, both old and new; but it is a real University, with all its faculties, Arts, Science, Law, Medicine, Theology, Music, Commerce, and Technology, fully and adequately represented. This is the marvel and this is our glory. To found a technical school in Manchester fifty years ago would have been a comparatively easy task, but we—meaning Greenwood, Ward, and myself—had higher views. We were determined to conquer or to die, to have a University or nothing. And these small beginnings have ended, through the enthusiasm and devoted work of our successors, in what you now see.

Here is material for meditation: "Greenwood, Ward, and myself"—the dauntless Three—against popular and journalistic prejudice and want of appreciation. And how are they, and their likes elsewhere, even yet appreciated?

Mr. John Macleod, I.S.O., whose name is well known in our mathematical columns, took leave of the Elginshire Secondary Education Committee, of which he has for many years been Chairman, at its final meeting the other week before reconstitution. Mr. Harvey, who replied, paid a tribute to Mr. Macleod's ability in the chair, and to the value of his knowledge and experience in guiding the work of the Committee. He said:

> Those of them who, like himself, had been associated with Mr. Macleod for many years, knew the extraordinary amount of labour he had put into the business of the Committee, and the zeal with which he worked. The schemes that he elaborated in the early days of the Committee were worthy of all praise: they were entirely the fruits of his own brain, and they had worked out exceedingly well. There was one thing that struck him more than anything else in his association with Mr. Macleod, and that was his invariable desire that struggling merit should have an opportunity of advancement in life: many pupils that had benefited by his interest in them would long remember his name with gratitude. The Committee were very sorry to part with him as their Chairman, but their memory would go back with great pleasure and profit to what they had learned from him, and they wished him and his family long life and prosperity.

It is a pleasure to record the grateful appreciation of such disinterested and fruitful labour, and to reflect that there must be many another inspector up and down the country similarly placing his technical knowledge and experience unselfishly and unostentatiously at the disposal of Local Authorities in advancing the work of education.

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SUMMARY OF THE MONTH.

SPEAKING at University College, London, on "Phonetics," Mr. D. Jones said that phonetics was not, as was often suggested, a newly discovered science. It was a science which was brought to a very high degree of perfection four thousand years ago by Indian priests and scientists whose object in studying pronunciation was to preserve unaltered the pronunciation of their ancient hymns, which were supposed to lose their efficacy if not pronounced according to ancient usage. It was only within the last thirty years that the science of phonetics had become known to the general public. The pronunciation of children in London schools was universally admitted to be deplorable, and complaint was made that teachers did not improve it; but the reason was that those teachers did not possess the necessary knowledge of phonetics to correct the bad pronunciation. Before long, however, there would probably be a marked improvement in this respect, because the Board of Education had recognized the importance of phonetics, and had introduced the subject in the regular course of training for elementary-school teachers. The English language had very much changed since Shakespeare's time, and, to show how it was pronounced three hundred years ago, Mr. Jones recited "It was a lover and his lass" in sixteenth-century pronunciation. He added that, to a person who had accustomed himself to the old pronunciation, Shakespeare lost some of his expressiveness—often to a marked extent when read in the ordinary modern southern English pronunciation: it sounded better in Scotch. Pronunciation continued to develop until, in the present day, the system of spelling was such that the spelling was absolutely no guide to the pronunciation.

CANON BARNETT, who understands the matter intimately, is very hopeful of the association of working men with University teaching, and gives his strong approval to the co-operation of London University and the Workers' Education Association. Writing in the *Westminster Gazette*, he says:

The University has, by its action, shown itself in sympathy with democracy. It has put itself and its treasures of knowledge at the service of workers. Representatives of workers' associations will have an equal voice in the choice of subjects and of teachers. Culture has offered Industry alliance on equal terms. The University no longer stands apart in academic calm, content to be used by those willing to pay their fees; the University has itself come to seek those it can help, and that it may disarm suspicion trusts its treasures to their care.

The one difficulty is to make workers aware of the offer, to make them appreciate the new departure, to open their eyes to see that in these tutorial classes they may find what they have not found at lectures, a stimulus to their intellectual force, a means of enabling them to grasp abstractions, a secret which will help them both to enjoy their own being and to take a more useful part in citizenship. Will the Press which workers read help to make the classes known?

The other difficulty is to make workers trust the University as the University has trusted them. Their suspicion may have its excuses, and they may think it politic to beware of gifts offered by classes who have not hitherto considered their interests. But the gifts at the disposal of the Universities are the means by which other classes have been enabled to get the lead, and no workman's college without the help of the Universities can supply them with the means of meeting all classes as equals. Workers will surely be well advised to seize the offer now made. There is promise of success. Already three hundred workers in London have given in their names as willing to become students in tutorial classes, submitting themselves to a course of three years' study in industrial history. But what are three hundred among the millions of London? Those who believe must not be in a hurry, but they must make haste.

MR. T. WHITEHEAD, Principal of the Bradford Pupil-Teacher Centre, read a paper before the National Federation of Teachers in Pupil-Teacher Centres on October 2. Following is his summary of conclusions:

The Centre is not a secondary school, nor is it in competition with secondary schools, for while the function of one is purely academic, that of the other is largely professional. Nor is it a training college, for its professional training is of a purely practical nature suited only to a concurrent course of theory and practice, and it is introductory to, rather than a substitute for, such an institution. I have pointed out that economic considerations demand that this period of training should take place before recognition, and that, psychologically, it should begin in the early teens. The ideal Centre, fulfilling its true function, should allow opportunity for specialization in the science and art of teaching. It should be an institution where child nature may be studied in all its varied aspects, where the subjects taught in the schools may be thoroughly analysed, and where every phase of school life may be brought under review. During this period the teacher should pass through the whole gamut of school experience, from the infant to the senior scholar, and the relation between the Centre and the school should be closely intimate. The principal of the Centre should be in vital touch with the head teacher in the school, and the two conjointly, and not apart, should seek the welfare of the embryo teacher. The teacher on leaving the Centre will have been taught how to observe, and, whether he is fortunate in securing further training in college or less fortunate in having to join the list of acting teachers, he will have secured a knowledge of the fundamental principles of his profession and a grip of the work. I am afraid that my suggestions will not be applicable to rural areas; but in concentrated areas, as in our towns and cities, it is imperative that the Federation and all who are interested in the teaching profession should see to it that the opportunities which Pupil-Teacher Centres offer are not filched away.

IN his opening address for the current session, Principal Sir James Donaldson, of St. Andrews, drew attention to the imminent probability that all elementary school masters will be schoolmistresses. He said:

From the report of the Committee of the Privy Council on Education in Scotland for the year 1908-9, we learn that the number of male teachers of every grade above that of pupil-teacher was in that year 5,114, and the number of female teachers 13,961, and that the additions to the body of teachers during that year were 240 males and 1,318 females—more than five females for one male. The number of students in training for that year shows a similar disproportion, for there were 658 men and 2,562 women. The outlook for the coming session is that the numbers will be still more disproportionate, for at the examinations for admission to the training colleges there were 74 males who were candidates and 591 females—*i.e.*, about eight women to one man, and of the 74 men 56 passed, and of the 591 women 548 passed, so that the women were nearly 10 to 1 in the passes. From this and other circumstances it is easy to foresee that the men will entirely, or almost entirely, disappear from the profession of primary teacher. Some think that the men may continue to remain in the hope of becoming head masters. School Boards have in the past time preferred for this post those who had taken the degree of M.A., and may do so in future; but now numerous women take the degree, and in all probability will continue to take it with the four years' course. So it is likely that the women will have the whole of the profession of primary teacher to themselves.

SOMETHING more will be required (says the *Standard*) than the cautious and calculating sympathy expressed by Lord Morley with the recommendations of Lord Reay's Committee on Oriental Studies if the proposed scheme is to be carried out successfully. The Committee in their Report have clearly proved the necessity of establishing an institution in England for the systematic study of Eastern languages; and the advantages to be gained by placing such a school under the control of the University of London are obvious. The Indian Secretary of State does not deny that the interests of the Empire would be served by this means; but he is inclined to think that the Committee has been rather ambitious, while he fears that the Treasury will hesitate to provide as much as £12,000 a year for the purpose. At least a quarter of that sum, and perhaps more, might be found; but Lord Morley doubted whether the Government would accept all the Committee's proposals. It will be a thousand pities if a scheme which promises to remove what has long been a reproach to a nation so deeply interested in the East as England is should be circumscribed in its usefulness by an inopportune parsimony.

MR. W. HOWARD WINTERBOTHAM, official Solicitor of the High Courts of Justice, in his presidential address at the thirty-fourth autumnal meeting of the Incorporated Law Society, at Newcastle, spoke out strongly for a central School of Law. He said:

Legal education has not been on the right lines. Articled clerks, with few exceptions, start their practical work on entering their articles without any knowledge of the law or legal principles. In my judgment the time is ripe for making attendance at a recognized law school compulsory before entering upon articles, and I suggest that after passing a preliminary examination in general education every student should be required to attend an approved law school for two years, devoting his whole time to studying the law with recognized law teachers. I feel certain that before long a central school of law will be established which will be the centre of legal education for the whole Empire. Such a school would provide for the training not only of members of the Bar

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and their own branch of the profession, but for all who are called on to administer justice in any part of our Empire as civil servants, or as magistrates, or in any other capacity.

Admirable sentiments. But what about the disposition of the moneys now in the hands of the Attorney-General from the sale of the Inns? What of the attitude of the Inns of Court? and of the Law Society itself? The University is ready and willing, and waiting for its share of those ample funds: who is it that stands in the way?

The enrolments of the Edinburgh School Board Continuation Classes have now been practically completed. In the commercial institutes there are 1,654 students as compared with 1,406 last year. The number attending the adults' classes is 1,616, an increase of 123 on the total for 1908. The schools showing decreases are situated in the south and west of the city. The large successes in the enrolments of the schools in the north, east, and centre are convincing proof that the mind of the public in those districts has been deeply stirred by the public meetings held in the various works, and by the personal canvass carried on by the head teachers of the different schools. Several of the schools are now filled, and the head teachers have been compelled to cease enrolling. The new features in this session's arrangements have generally proved extremely popular. For example, very large classes have been formed in plumbers' work, housewifery, home nursing, civics, economics and industrial history, shorthand speed, and modelling in copper and brass.

Prof. Charnock Bradley, speaking on "The Commercial Value of Scientific Investigations," at the opening of the session at the Royal (Dick) Veterinary College, Edinburgh, said that, while considerable assistance had been given to research by commercial and business men in that and other cities, yet (hopeful though the prospect of the proper recognition by the business men of the commercial value of science now was) it was unfortunately true that many non-professional men were still to be found who regarded all scientific work as useless and a waste of time unless immediate utility could be demonstrated. Some of the most important discoveries and inventions had their origin in investigations which at the time did not promise to develop into knowledge capable of being turned to useful account. He hoped that some day a volume would be written—dedicated to the practical man—setting forth the small and inconsiderable discoveries on which the foundations of modern industries had been based. When this was done it would astonish the unthinking—and they were many—to learn that without scientific research modern civilization would have been impossible.

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Cambridge. The term is young, but lusty and vigorous as an eagle. A record entry of 1,140 freshmen is a subject of congratulation to deans and bursars, more especially to the latter. Plain people ask themselves a plain question: "Is it quantity or quality that we should rejoice over?" It is sweet to think that Cambridge, the kindly Alma Mater of British and Oriental youth, welcomes to its arms the simple striplings who would not be able, in spite of their years, to qualify for admission to the best of our public schools.

The first function of term was the unveiling of a statue of Tennyson in the ante-chapel of his old College—Trinity. The dedicatory oration was delivered with due impressiveness by Mr. Arthur Sidgwick, and a reception at the hospitable lodge of Trinity concluded the celebrations.

The new regulations as to alternatives for the General Examination are now in force and are working with as fatal an effect as ever was prophesied by their most vehement critics. The freshmen have instantly found the weak spot in the fence and the soft option has been detected with unerring accuracy by the intelligent freshman. In the case of those destined for professional careers, an appropriate special has usually been selected, while for those who have no further aim in their University course than to get to the end of it, History with Law has been universally selected as the broad and easy path. Even a freshman is able to note the fact that one subject is practically possessed in common by the two examinations; hence the choice.

The Syndicate who guide the studies of Army candidates are said to be preparing a scheme for a special in military subjects. This has been advocated in these columns, and will doubtless be a *fait accompli* before very long. The candidates will probably take the combination of law and military subjects, and thus will spend the whole of their time in work which has more or less connexion with their future career. Those who have a speciality, such as modern languages or mechanics, will doubtless substitute some appropriate special for that of Law, and, on the whole, the change will be a welcome one, and will attract this class of man to Cambridge at the expense of the sister University.

This term sees a considerable development in the practice of informal lecturing by recognized experts. First and foremost, Lieutenant Shackleton will have delighted us with an account of his experiences before these notes see the light; Prof. Browne gives us a course on Persian History; Mr. McTaggart discourses on Philosophy; Mr. Wace will describe recent excavations in Thessaly, following Mr. R. M. Dawkins, who recently gave us a most lucid and interesting account of similar experiences at Sparta.

The election to the Mastership of St. Catharine's was a surprise to the public, but a source of congratulation withal. The electing body must be rejoiced that their selection of the Rev. C. W. H. Johns, the noted Assyriologist, has received no hostile criticism whatever. Patient work, a career free from all trace of self-seeking, and sterling merit have obtained their reward.

The fact that there has been a vacancy at "Cat's" reminds us that death has also deprived us of two of our youngest and most promising workers. Mr. D. J. Carnegie, one of the mainstays of the Extension Lectures, whose tragic death occurred a few weeks ago, and Mr. Bryan Cookson, a man just beginning to earn name and fame in the department of Astro-Physics, to which he had devoted his keen intellectual powers—these are real losses, unexpected and irreparable.

According to a very wise regulation, the Quick Professorship of Biology is vacant at the end of the three years for which Prof. Nuttall was elected; the result of the fresh election is, of course, a foregone conclusion, and the reappointment will only serve to show how cordially the electors recognize the good work done by the talented occupant of this particular chair.

The new Examination Rooms are proving very useful for other functions besides those for which they were originally designed, and possibly the festivities of next May Week may suggest a still wider sphere of usefulness. Magdalene has developed structurally to keep pace with its increase in personnel, and the regime of the present Master has already proved its epoch-making character.

One of our social and athletic clubs has also dabbled with bricks and mortar during the Long: the Hawks have broken out into a dining room, so that now there are three institutions where the undergraduate can obtain the conveniences, if not the luxuries, of a London club—the Union, the Pitt, and the Hawks. The last-named club also intend to make another new departure and give a small ball at the end of the October term.

The Rugby football side shows a certain amount of promise; but the three-quarter line at present looks lamentably weak and quite unlikely to cope with the wonderful combination that Oxford can bring against us. The loss of two such players as M'Leod and Wright is making itself severely felt.

The new President of the C.U.B.C., Mr. E. G. Williams, is setting to work with a will, and has much promising material from which to fill the vacant places. With a nucleus consisting of Rosher, Hornidge, Swanston, and Fairbairn, he should not have a difficult task.

On October 23 a grand field day was held, in which University and Public School Territorials met in their annual combination. The streets were enlivened also by the welcome presence of the London Scottish, and Cambridge looked like a garrison town.

London. The Provost of University College, addressing the new students, said that, during their undergraduate course, they should have no time for any public meetings outside the life of the University community; it ought to be considered an act of disloyalty to belong to any club outside the University. Political partisanship, or a close following of political movements in this time of feverish political agitation, was specially baneful. Last year there were students who became so interested in certain causes as to forget altogether they were students. Speaking to the Indian students,

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he said that one sympathized with them in the crisis which their country was passing through, but they must not forget that they were welcomed in the University as students, not as politicians. The College prided itself on having few rules, but it exacted implicit obedience to those few. In conclusion, he reminded them that "a little thing is a little thing, but faithfulness in little things is a great thing."

The eighty-seventh session of the Birkbeck College, Chancery Lane, was opened with an address by Dr. H. A. Miers, Principal of London University. Among the founders of the College (said Dr. Miers) was to be found the name of Francis Place, the Radical tailor and friend of Jeremy Bentham and James Mill, who played so large a part in the social reforms of the first half of the nineteenth century. Born within a stone's-throw of the College, his boyhood was spent in miserable and sordid surroundings, and, after his marriage, the weekly joint earnings of himself and his wife did not exceed 17s. In the midst of all these difficulties he managed to educate himself and ultimately to become a man of great influence among the most intellectual and powerful politicians of the country. "It is surely appropriate that I, his great-grandson," said the Principal to the astonished students, "should congratulate the Birkbeck Institution upon the good work it has done and the enormous advances which it has made during the eighty-five years which have elapsed since its foundation." He ventured to assert that every friend of popular education was proud of what it had achieved. Calling attention to a possible danger which attended the provision of increased educational facilities Dr. Miers said that, now so much was provided for the London student, there was a danger lest both he and his teachers should forget that all the provisions were useless without effort on the part of the student. There was a danger lest the process of education should be increasingly regarded as a process of putting something into the student or of moulding and fashioning him for the work which he had to do. A very great stimulus for effort of a certain sort was supplied by examinations, the grim shadow of which hung over the student's path at every stage of his career; but it was a melancholy reflection that, if the examination stimulus were suddenly taken away, a very great number of English students would as suddenly lose the real incentive to intellectual effort. If they had any real interest and enthusiasm for their work it should persist after the examination had gone. He advised the students not so much to amass facts and acquire knowledge as to understand principles and acquire wisdom. He believed that if they discussed not the details, but the principles, of the subject which they were studying, they could do as much in the cause of their own education as any teacher or book or examination could do for them.

The session of the Women's College of the University of London, South Kensington, was opened by Sir Alfred C. Lyall with an address on "The Reading of History." Now, when education had come in like a flood (he said), no part of literature was more sedulously studied than the field of history. On the other hand, the field was being very considerably enlarged, and during the ten years ending 1907 there were published in England 5,498 books under the head of history and 1,059 biographies. Authentic history may be said to have begun in Europe, and had been practically confined to that continent. A vast collection of historical material had accumulated, and necessarily required methodical treatment by men of trained intelligence and of untiring industry, men learned and accurate. These had created what was now termed the "science of history." In earlier times it was mainly an art, and necessarily so: the primitive chronicler had very little material for his stories of bygone times; he gave a dramatic version of great events. The same style and method were to be noticed in the historical books of the Old Testament. To analyse these records closely would be to break up the picture and destroy the artistic effect; the story must be taken as a whole. But, though they now spoke of the science of history, they had modern writers who had to some extent followed the ancient manner; these were artists, and their descriptions of events were so far touched with the same characteristics as those of which he had spoken as marking the old historians. He feared that the tendency of the twentieth century was unfavourable to the artistic historian and that the close investigation of every detail must discourage picturesque compositions. But the change was unavoidable. The historian of to-day had to take up a very narrow ground: to peg out a claim and not wander outside its bounds. Groups of scholars working in unison were necessary, and we knew no more of the old-fashioned histories embracing vast subjects, of histories of the world, or a history of Europe in thirty volumes. The demand for lighter and shorter books than the great histories had led to a supply which enabled the reader to obtain a bird's-eye view of the [illegible]t, the bold outlines of the historic landscape. But this kind of reading was disconnected in style and subject; and it might be expedient to give a warning against the habit of neglecting the great English classics for short biographies or compendious sketches of periods and personages; the reading of serious students of history must be continuous and consecutive. A warning from reading history was that we must not be hasty when considering the misdeeds of past generations, whether of their rulers or their people. The times were hard, so were the men. On the whole, he did not know any recent works that might be more profitable for advice and guidance in reading history than the three volumes of Lord Acton. They contained the essence of his unceasing labours in collecting, comparing, and testing an immense quantity of historic material.

The University Extension Board's scheme of lectures for the coming session shows that between sixty and seventy courses have been arranged to be delivered in different parts of the London area. The most interesting development of the work has been the Senate's adoption last session of a scheme for diplomas in History, in Literature, and in Economics and Social Science, to be awarded after a four years' course of study. Special courses designed with a view to this diploma have been arranged for the coming session, and some of the work will be carried on in permanent institutions like University College and King's College. A special pamphlet, explaining the diploma scheme and setting out the courses and the places where they will be delivered, may be obtained of the Registrar of the University Extension Board at the University.

Cardiff. THE new buildings in Cathay's Park were opened by Lord Plymouth on October 14. They stand on a site of five acres, the gift of the city, valued at £20,000. Only the Arts Department, the Library, and the administrative block have as yet been erected. The expenditure on these has been £130,000, and the total amount to be ultimately spent will be £260,000. The buildings occupy a fine position in the park, and have a beautiful outlook on extensive ornamental gardens and King Edward's and Museum Avenues, which are lined with trees. The façade of the College is decorated with designs representing the arts and sciences, and the arms of the Presidents of the College past and present, and the arms of Wales and divisions of Wales. One enters into an extensive vestibule, at the further end of which is a finely executed statue by Mr. W. Goscombe John, R.A., of the late Principal Viriamu Jones, first Principal of the College. The grand staircase is constructed of alabaster from the Rhaetian rocks at Penarth. From the balcony in front a fine view of the park is to be had. The Library, to the erection of which the Drapers' Company made a gift of £16,000, is surmounted with a semi-circular roof, and three large windows at one end bear the arms respectively of the Prince of Wales, the Drapers' Company, and the College. It has space for a hundred thousand volumes and is lighted, in the main, from the roof. Until the Great Hall is erected the Library will serve for large meetings. A narrow gallery 100 ft. long has been specially constructed for optical experiments. All the interior woodwork is of American white wood or fumed oak. The outer walls of the building are of Portland stone. When the whole scheme is completed the buildings will be symmetrically grouped round a great court larger than Tom Quad, Christ Church, the largest quad in Oxford. In designing the buildings the architect himself says that he "had in mind the many delightful Classical and semi-Classical examples in both our ancient Universities, and has endeavoured to give a flavour to the building, which, while being distinctly modern and of its time, is intended to recall some of the feeling which is so characteristic of that typically British, and at the same time scholarly, architectural development."

Edinburgh. THE University buildings are receiving considerable extensions, especially for the better accommodation of the departments of Physiology and Chemistry. A new lecture room has been erected for some 350 students: it has no desks, but the chairs have a continuation of the right arm suitable for writing.

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THE EDUCATIONAL LADDER.

Aberystwyth University College.—Entrance Scholarships and Exhibitions: W. J. Davies, County School, Carmarthen (David Davies Scholarship), £40; Hannah Davies, County School, Barmouth (Principal's Scholarship), £40; H. C. Lewis, County School, Carmarthen (Visitors' Scholarship), £30; A. G. White, County School, Llanelly (Keeling Scholarship), £25; Roger Thomas, County School, Narberth (Agricultural Scholarship), £20; E. R. Williams, County School, Gowerton (Welsh Scholarship), £20; J. E. Dixon, Grammar School Bolton (Open Exhibition), £10; Evelyn B. Daw, Technical School, Birmingham (Open Exhibition), £10; E. W. Barton, Grammar School, Swansea (Open Exhibition), £10; D. J. Williams, County School, Towyn (Open Exhibition), £10; Elvina R. Jones, County School, Towyn (Open Exhibition), £10; Elizabeth D. Jones, County School, Towyn (Welsh Exhibition), £10; W. E. Phillips, Grammar School, Haverfordwest (Welsh Exhibition), £10; John F. Powell, Grammar School, Swansea (Welsh Exhibition), £10; H. J. Evans, Grammar School, Haverfordwest, and School of Pharmaceutical Society (Welsh Exhibition), £10; E. A. Edwards, County School, Tredegar (Welsh Exhibition), £10; Clifford Jones, County School, Whitland (Welsh Exhibition), £10; Rhys Griffiths, County School, Whitland (Welsh Exhibition), £10; E. S. Roberts, University College of Wales (Cynddelw Scholarship), £20.

Agricultural Society, Royal.—National Diploma in Dairying: 37 candidates (out of 59) passed.

Cambridge University.—*Emmanuel College.*—Research Studentships open to graduates: A. B. Adams, B.A., £120; C. F. Taylor, B.A., £120; E. M. Wellisch, B.A., £150. Grants from the fund: R. D. Kleeman, B.A., S. Maugham, B.A., and T. G. Taylor, B.A., £20 each.—Exhibition to an Advanced Student, £50: H. J. Swain, University of Sydney. Additional Exhibitions, £20 each: J. Pinkerton, M.A., Edinburgh University; R. D. Vernon, B.Sc. Lond., University College, Nottingham.

Trinity.—Fellowships: Percy James Pearse, B.A.; Henry Arthur Hollond, B.A.; James Mercer, B.A.; Donald Struan Robertson, B.A.

Cambridge: Newnham College.—Scholarships of £50 a year for 3 years (on results of Cambridge Local Examination, June): Clothworkers' Scholarship, G. E. Powers (City of London School for Girls), for Science and Mathematics: Goldsmiths' Scholarship, A. M. Holden (St. Elphin's School, Darley Dale), for Languages; Winkworth Scholarship, K. Grant (St. Paul's Girls' School), for Mathematics and Science; a college scholarship, C. M. Garlick (Wyggeston School for Girls, Leicester). Scholarships of £35 a year for 3 years: D. Bott (King Edward's School, Birmingham), for Modern Languages, and F. K. Rolland (Graham Street High School), for Mathematics. Gilchrist Scholarship, £50 a year for 3 years, tenable at either Girton or Newnham: D. Dale (King Edward's School, Birmingham), for Science. Miss Dale has elected to hold it at Newnham College. Scholarship offered for Classics last March (£50 a year for 3 years): A. Yoxall (St. Paul's Girls' School). Mathilde Blind Scholarship (£50 a year for 3 years): L. Perry (Elson House School, Leytonstone), for Modern Languages. Arthur Hugh Clough Scholarship for fourth-year students: Miss A. Woodward (Classical Tripos, Part I, 1909, Class 1, Division 2) and Marion Kennedy. Studentships for Research: Miss J. F. Cameron (Mathematical Tripos, 1908, equal to tenth wrangler) and Miss Emily May Smith (Moral Sciences Tripos, Part I, 1907, Class 1; Part II, 1909, Class 1, with distinction in Psychology). Gilchrist Fellowship for professional training: Miss D. H. G. Reeve (Medieval and Modern Languages Tripos, 1907, Class 1, with distinction in German). Harkness Scholarship for Geology: Miss M. F. Macphee, of Newnham College.

Cardiff University College.—Entrance Scholarships and Exhibitions: Drapers Company's Scholarship of £35 for 1 year: John Todd Hendry, Intermediate School for Boys, Cardiff (together with a City of Cardiff Scholarship in Science). Caroline Williams Scholarship of £25 a year for 3 years: Margaret Jane Howells, County School, Narberth. Sir Alfred Thomas Scholarship of £20 a year: David Felix Davies, Intermediate School, Aberdare. 1909 Arts Scholarships of £40 a year for 3 years: Jennie Madeline Price, County School, Merthyr Tydfil. Isaac Roberts Scholarship in Science of £50 a year for 3 years: David Reginald Lloyd, Barry County School. Brecon Scholarship of £27 a year for 3 years: David Erasmus Thomas, County School, Brynmawr. Cradock Wells Exhibitions: Rhys Trevor Jones, Municipal Secondary School, Cardiff; Sidney Watkiss, Municipal Secondary School, Cardiff; and Dan Stuart Rees, Municipal Secondary School, Cardiff. City of Cardiff Scholarships in Arts: W. Gladstone M'Pherson and Charles Cuthe Cole, Municipal Secondary School, Cardiff, and Pupil-Teachers' Centre, Cardiff. City of Cardiff Scholarships in Science: John Todd Hendry, Boys' Intermediate School, Cardiff (together with the Drapers' Company's Scholarship); and William Morgan Jermain, Boys' Intermediate School, Cardiff. Exhibitions to the value of £10 each: William Rees, County School, Llandilo; Oswald J. Francis, Pontywaun County School; Lucy Stodden, County School, Penarth; Walter B. Bucquet, County School, Barry; Edith M. Davies, Howell's School, Llandaff; Gwladys G. Morgan, County School, Bridgend; Thomas Herbert Richards, County School, Neath; Phœbe M. Tucker, Intermediate School, Newport; Dora Elizabeth Brockington, Howell's School, Llandaff, and Pupil-Teachers' Centre, Cardiff; Ernest I. Davies County School, Barry; James H. Dunbar, County School, Welshpool; and Elizabeth M. H. Lewis, County School, Aberdare. "Caradog" Scholarships in Music of £50 a year for 3 years: Moriydd Owen, County School, Pontypridd. £25 a year for 2 years: Herbert M. Rowlands, School for Sons of Missionaries, Blackheath, and County School, Gowerton. £25 a year for 2 years: Joseph Reys Lewis, Ferndale.

Edinburgh Heriot-Watt College.—£500 distributed in day class bursaries, from £10 each; £200, in evening class bursaries, £2 each.

Glasgow: Ferguson Scholarships (open to all the Scottish Universities—£80 each for 2 years: Classics, Herbert J. M. Milne, M.A., Aberdeen. Mathematics, James T. Lawrence, M.A., Aberdeen. Philosophy, Richard Smith, M.A., St. Andrews.

Leeds University.—1851 Exhibition Science Scholarship (£150 a year) Miss Sybil Leslie, B.Sc. This is the first time such a scholarship has been awarded to a Leeds woman student. Miss Leslie is going to study under Madame Curie.

London University.—Inter-Collegiate Scholarships Board: *University College.*—Bucknill Scholarship (135 guineas), C. I. de Silva, University College, London; Two Exhibitions (55 guineas each), R. J. Clausen, University College, London, and D. H. D. Wooderson, William Ellis School, Gospel Oak. *King's College.*—Sambrooke Medical Exhibition (£100), C. F. Hacker, University College, London; Warneford Scholarships (£100 each), S. H. Hodges, Monkton Combe School, and G. T. Symons, Blundell's School, Tiverton. *Westminster Hospital Medical School.*—"Guthrie" Arts Scholarship (£60), M. C. Breese, Dulwich College; Natural Science Scholarship (£60), H. J. Hoyte, University College, Nottingham. *London (Royal Free Hospital) School of Medicine for Women.*—St. Dunstan's Medical Exhibition (£180), Miss North Hamill, St. Paul's Girls' School; Scholarship (£30), Miss Lyndall Rice, formerly of Girls' High School, Brisbane.

Charing Cross Hospital.—Entrance Scholarships. Epsom Scholarship, 60 guineas: D. W. Pailthorpe. Livingstone Scholarship, 75 guineas: F. J. Halliman. Huxley Scholarship, 50 guineas: David B. S. Jones. Scholarship, 30 guineas: H. W. Williamson. Universities Scholarship, 50 guineas: J. M. Davis. Universities Exhibition, 20 guineas: Abel Evans.

Guy's Hospital.—Senior Science Scholarship for University Students, £50: Trevor Braby Heaton, B.A., Christ Church, Oxford. Junior Science Scholarships: £150, Charles Hamilton Gould. Preliminary Science Class, Guy's Hospital, and B.H.S., Christchurch, New Zealand; £60, James York Moore, Preliminary Science Class, Guy's Hospital. Equal Certificates: Allan Noel Minns, Thetford Grammar School, and Cyril Henry Edwards, St. Paul's School, West Kensington. Entrance Scholarships in Arts: £100, Henry Francis Thomas Hogben, Bedford Grammar School, and William Morris Lansdale, St. Olave's and St. Saviour's Grammar School (equal); £50, James Kyle, University Tutorial College.

London Hospital.—Price Entrance Scholarship in Science, £120: J. Bostock. Entrance Science Scholarships: £60, A. G. Winter; £35, R. J. M. Love. Epsom Scholarship, £126: H. G. Winter. Price Scholarship in Anatomy and Physiology (University Scholarship), £60: J. R. Marrack, St. John's College, Cambridge.

Middlesex Hospital.—Entrance Scholarships: (1) A. M. Wheeler, (2) T. C. Kidner, (3) A. O. Gray. University: T. L. Hardy and H. J. Shields (equal). Freer Lucas (Epsom College Scholar): C. E. Procter. New Zealand: T. Harrison.

St. Bartholomew's Hospital.—Senior Entrance Scholarship in Science, £75 each: A. G. Evans, B.A., Trinity College, Cambridge; and A. C. Roxburgh, B.A., Trinity College, Cambridge, and G. Sparrow, B.A., Caius College, Cambridge (the last two equal). Junior Entrance Scholarship in Science, £50: P. O. Ellison and D. H. D. Wooderson (equal). Entrance Scholarship in Arts, £100: C. Cooke, Magdalen College School, Oxford. Jeaffreson Exhibition in Arts, £50: G. C. Linder, Brighton Grammar School.

St. George's Hospital.—The University Entrance Scholarships of 70 guineas and £50 respectively have been added together and divided equally between E. F. W. Grellier, Downing College, Cambridge, and W. E. Waller, University College, Oxford.

University College Hospital.—Bucknill Scholarship and Medical Entrance Exhibition: see above—Inter-Collegiate Scholarships Board. Epsom Free Scholarship: J. H. Stuart, Epsom College.

London School of Economics.—Mitchell Scholarship, £25: Lionel M. Swan, London School of Economics.

Manchester Grammar School.—Foundation Scholarships: H. K. Ainsworth, H. T. Benson, J. P. Bowden, W. L. Brewerton, H. C. Clough, H. W. Coombs, F. G. Crowe, A. S. Gregory, L. Holt, A. F. Hutt, J. Rivers, C. H. Schofield, S. Smith, V. H. Stott, and C. Walmsley. A bursary for one year: P. Bernstein.

Oxford University.—Geographical Scholarship for 1909-10: Harry Wallis, B.A., Scholar of Hertford College. Junior Kennicott Scholarship: W. A. Davies, B.A., non-collegiate. Pusey and Ellerton Scholarship: Digby Guy Learoyd, Exhibitioner of Wadham.

Balliol.—Fellow, and Theological and Classical Tutor: the Rev. Neville Stuart Talbot, B.A., Christ Church.

Brasenose.—Senior Hulme Scholarships: R. C. Lodge, Somerset Scholar, and Valentine W. O'C. Miley, open scholar. Indian Civil Service Scholarships: James P. Wilson, formerly Junior Hulme Scholar, and Alfred D. G. Hore, B.A., late open scholar.

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Merton.—Fellowships: Walter B. Gill, B.A., formerly Scholar of Christ Church; Gerald Gould, late Exhibitioner of Magdalen.

New College.—Fellowship: A. G. Heath, B.A., Scholar of the College.

St. John's.—Senior Scholarship: E. W. Sutton, Scholar of the College.

St. Andrews University.—Entrance Bursaries of £15 each, 12 awarded. Second Year Bursaries: 3 of £20, and 5 of £15, awarded. Third Year Bursaries: 3 of £20, and 2 of £15, awarded. Fourth Year Bursaries: 1 of £20, 1 of £15, and one of £5, awarded. Fifth Year Bursaries: 1 of £20, and one of £10, awarded. Research Scholarship of £40: Janet D. Scott, B.Sc., and William Strong. Robertson Scholarship, £20 for 6 years: Robert Loudon.—Berry Scholarships, £80 each for one year: Mental Philosophy, Richard Smith, M.A.; Mathematics and Natural Philosophy, Archibald H. R. Geldie. Ramsay Scholarship, £80 for one year: Classics, William Douglas, M.A. Bruce Scholarship, £50 for two years: Classics, Frank Batcheler. Millar Prize, £30: Mental Philosophy, Richard Smith, M.A.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A meeting of the Council was held at the College, Bloomsbury Square, on October 20. Present: Sir Philip Magnus, President, in the chair; Dr. Armitage Smith, Mr. Barlet, Mr. Charles, Miss Dawes, Mr. Easterbrook, Mr. Eve, Mr. Holland, Mr. Kelland, Miss Lawford, Rev. R. Lee, Dr. Maples, Mr. Marx, Mr. Milne, Mr. Pendlebury, Mr. Rule, Mr. Rushbrooke, Mr. Starbuck, Rev. J. Twentyman, Mr. Vincent, Mr. Walmsley, and Mr. White.

The minutes of the last meeting were read and confirmed.

The Secretary reported the results of the recent Summer Examination of Teachers, and diplomas were granted to those candidates who had satisfied the prescribed conditions. (For list see page 451). The prize of £10 for Theory and Practice of Education was awarded to Mr. E. A. Read, and the prize of £5 for Natural Sciences to Mr. P. F. Adams.

The Report of the Finance Committee, showing the result of the operations of the College during the first three quarters of the current year, was adopted.

The Report of the Examination Committee was adopted. The Rev. G. E. Mackie, M.A., was appointed one of the examiners in Scripture History, and Mr. J. Blake Harrold, A.C.I.S., was appointed one of the examiners in Book-keeping

The Report of the Special Committee appointed to consider the circumstances in connexion with the refusal of the Board of Education to recognize as efficient a private school on which the Board's Inspectors had reported favourably was adopted.

Four members of the Council were appointed to act as the representatives of the College at a Conference on the Registration of Teachers to take place on November 13.

The following persons were elected members of the College:—

Mr. J. E. Brown, Maitland House, Morley, Leeds.
Rev. J. Magill, A.C.P., 12 Eyre Square, Galway.
Mr. E. D. McQueen Gray, B.A. Lond., University Hill, Albuquerque, New Mexico.

The following books had been presented to the Library since the last meeting of the Council:—

By Dr. A. F. Murison.—Maclean's Law concerning Secondary and Preparatory Schools.

By Allman & Son.—Addis's Style in Composition, and Macaulay's Lays; Bally's Preparatory German Lessons; Blouet's Elementary French, Intermediate French, Aids to French Examinations, and French-English Dual Readers, Parts I, II, and III; First Aid to the Injured; Hamer's Notes on St. Matthew, Notes on St. Mark, Notes on St. Luke, and New Testament History; Healing's Manual of Geography; Hill's Student's Systematic Aid to Chemistry; Johnson's Text-Book of Botany for Students; Jones's German-English Dual Reader; Laurie's Introduction to Elementary Botany and Field Botany; Lees's Brief Geography of the World; Nixon and Steel's Bible Reader, Part I; Punch's Wordsworth; Toyne's Sketch of the Tudor Period; Varley's Geometry, Parts I and II.

By the Cambridge University Press.—Anderson's Livy, Book IX; Gow's Horace, Satires, Book II.

By W. B. Clive.—Matriculation Directory, September, 1909.

By Methuen & Co.—Draper's D'Ajaccio à Sainte-Hélène; Firth's English Literature for Schools; Wilmot-Buxton's By Road and River.

By the Oxford University Press.—Oxford Plain Texts (Macaulay's History of England, Chapter III, and De Quincey's Spanish Military Nun, &c.); Bowley's Macaulay's History of England, Chapter III; Collins's De Quincey's Spanish Military Nun, and Revolt of the Tartars; Gordon's Shakespeare's Richard II, Julius Cæsar, and Macbeth; Innes's Scott's Waverley; Wyld's Elementary Lessons in English Grammar.

By Alston Rivers.—Cash's Selections from Anson's Voyage round the World; McNair's Guide to the Study of English History, Part III; Wainwright's Selections from Pliny's Natural History, Books VIII-X.

Incorporated Accountants' Year Book.
Calendar of University College, Reading.
Calendar of University of Leeds.
Calendar of Birkbeck College.
Calendar of Aberdeen University.
Calendar of Victoria University of Manchester.
Calendar of the Royal College of Surgeons of England.

ANTHROPOLOGY AND POLITICAL SCIENCE.

In his presidential address to the Anthropological Section of the British Association at Winnipeg, Prof. John L. Myres reviewed in rapid outline the influence of Anthropology on the course of Political Science, and pointed the practical issues. Anthropology being the Science of Man, "its full task is nothing less than this: to observe and record, to classify and interpret, all the activities of all the varieties of this species of living being." Indeed, it is more: we should include physical characters. Prof. Myres presented successive pictures of the Pre-Social State as drawn by philosophers from Aristotle downwards, explained why these different conceptions took the particular shape they did under the several circumstances of the ages that gave them birth, and showed that one of the principal factors determining their form was the actual state of anthropological knowledge in the years immediately preceding their publication. We reproduce his "Epilogue," remarking that his conclusions are as applicable at home as in Canada, and that their bearings touch education as nearly as they touch political science.

These examples, I think, are sufficient to show how intimately the growth of political philosophy has interlocked at every stage with that of anthropological science. Each fresh start on the never ending quest of *man as he ought to be* has been the response of theory to fresh facts about *man as he is*. And, meanwhile, the dreams and speculations of one thinker after another—even dreams and speculations which have moved nations and precipitated revolutions—have ceased to command men's reason when they ceased to accord with their knowledge.

And we have seen more than this. We have seen the very questions which philosophers have asked, the very questions which perplexed them, no less than the solutions which they proposed, melt away and vanish, *as problems*, when the perspective of anthropology shifted and the standpoint of observation advanced. This is no new experience; nor is it peculiar either to anthropology among the natural sciences or to political science among the aspects of the study of man. It is the common law of the mind's growth which all science manifests, and all philosophy.

And now I would make one more attempt to put on parallel lines the course of political thinking. It is not so very long ago that a great British administrator, returning from one of the gravest trials of statesmanship which our generation has seen, to meet old colleagues and classmates at a college festival, gave it to us as the need he had most felt, in the pauses of his administration, that there did not exist at present any adequate formulation of the great outstanding features of our knowledge (as distinct from our creeds) about human societies and their mode of growth, and he commended it to the new generation of scholarship, as its highest and most necessary task, to face once more the question: What are the forces, as far as we can know them now, which, as Aristotle would have put it, "maintain or destroy States"?

But if a young student of political science were to set himself to this life work, where could he turn for his facts? What proportion of the knowable things about the human societies with which travellers' tales and the atlases acquaint him could he possibly bring into his survey, without a lifetime of personal research in every quarter of our planet?

I have in mind one such student setting out his coming session to investigate, on the lines of modern anthropology, the nature of *Authority* and the circumstances of its rise among primitive men; and the difficulty at the outset is precisely as I have described. In the case of the "black fellows" of Australia such a student depends on the works of some four or five men, representing (at a favourable estimate) one-twentieth even of the known tribes of the accessible parts of that continent. For British South Africa he would be hardly better served; for British North America, outside the ground covered in British Colombia by Boas and Hill-Tout, he would have almost the field to himself; and the prospect would seem to him the drearier and the more hopeless when he compared it with things on the other side of the forty-ninth parallel.

Now, our neighbours south of that line have the reputation of being practical men: in other departments of knowledge they are believed to know well "what pays." And I am forced to believe that it is because they know that it *pays*, to know all that can still be known about the forms of human society which are protected and supervised from Washington, that they have gone so far as they have towards rescuing that knowledge from extinction while still there is time. The Bureau of Ethnology of the United States of America is the most systematic, the most copious, and, I think, taking it all in all, the most scientific of the public agencies for the study of any group of men, *as men*. The only

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other which can be compared with it is the ethnographical section of the last census of India, and that was an effort to meet, against time, an emergency long predicted, but only suddenly foreseen by the men who were responsible for giving the order. Thus, humanly speaking, it is now not improbable that in one great newly settled area of the world every tribe of natives, which now continues to inhabit it, may at least be explored, and in some cases really surveyed, before it has time to disappear. But observe, this only applies to the tribes which now continue to exist; and what a miserable fraction they are of what has already perished irrevocably! It is no use crying over spilt milk, as I said to begin with; the only sane course is to be doubly careful of whatever remains in the jug.

An Ethnological Survey for Canada.

And now I conclude with a piece of recent history, which will point its own moral. When the British Association met first outside the British Isles, it celebrated its meeting at Montreal by instituting, for the first time, a section for Anthropology; and it placed in the chair of that section one of the principal founders of modern scientific anthropology, Dr. Edward Burnett Tylor, then recently installed at Oxford, and still the revered Professor of our Science there. Through his influence mainly, but with the active goodwill of the leading names in other sciences in Canada, a research committee was formed to investigate the north-west tribes of the Dominion; and for eleven consecutive years expeditions wholly or partly maintained by this Association were sent to several districts of British Columbia. These expeditions cost the Association about £1,200 in all. I am glad to think that the chief representative of this Committee's work, Dr. Franz Boas, has long since realized, in his great contributions to knowledge, the high hopes which his early reports inspired.

When the Association met the second time on Canadian soil, at Toronto, the occasion seemed opportune for a fresh step. Dr. Boas had already undertaken work on a larger scale and under other auspices. But it was thought likely that if a fresh Committee of the Association were appointed, with wider terms of reference and further grants, it would be possible to select and to train a small staff of Canadian observers, and by their means to produce such a series of preliminary reports on typical problems of Canadian anthropology as would satisfy the Dominion Government that the need for a thorough systematic survey was a real one, and that such a survey would be practicable with the means and the men which Canada itself could supply. Among the leading members of this Ethnographic Survey Committee I need only mention three—the late Dr. George Dawson, Mr. David Boyle, and Mr. Benjamin Sulte, each eminent already in his own line of study, and all convinced of the great scientific value of what was proposed. The first year's enterprise opened well; workers were found in several districts of Canada; the Association sent out scientific instruments, and formed in London a strong Consultative Committee to keep the Canadian field-workers in touch with European students of the subject. But the premature death of George Dawson in 1901 broke the mainspring of the machine; the field-workers fell out of touch with one another and with the subject; the instruments were scattered, and in 1904 the Ethnographic Survey Committee was not recommended for renewal.

I need not say how great a disappointment this failure has been to those of us who believe that in this department of knowledge Canada has great contributions to make, and who know—as this meeting too knows perfectly well—that if this contribution to knowledge is not made within the next ten years, it can never be made at all. I am not speaking merely of the urgency of exact study of the Indian peoples. This indeed is obvious and urgent enough; and the magnificent results of organized efforts in the United States are there to show how much you too can still rescue, if you will. But at the moment I appeal rather for the systematic study of your own European immigrants, that stream of almost all known varieties of white men with which you are drenching yearly fresh regions of the earth's surface, which, if they have had experience of human settlements at all, have known man only as a predatory migratory animal, more restless than the bison, more feckless and destructive than the wolf. Of your immigrants' dealings with wild Nature you are indeed keeping rough undesigned record in the documents of your Land Surveys, and in the statistics of the spread of agriculture over what once was forest or prairie; and in time to come, *something*—though not, I fear, much—will exist to show what good (and as likely as not, also, what irremediable harm) this age of colonization has done to the region as a whole. But what you do not keep record of is Nature's dealings with your immigrants; you do not *know*—and as long as you omit to *observe*, you are condemned not to know—the answer to the simple all important question, *What kinds of men do best in Canada? What kind of men is Canada making out of the raw material which Europe is feeding into God's mills on this side?*

Over in England, we are only too well aware how poor a lead we have given you. We, too, for a century now, have been feeding into other great winnowing chambers the raw crop of our villagers. We have created (to change the metaphor), in our vast towns, great vats of fermenting humanity, under conditions of life which at the best are unprecedented, and at their worst almost unimaginable. That is *our* great experiment in modern English anthropology—*What happens to Englishmen in city slums?* and we shall hear, before this meeting ends, something of the methods by which we are attempting now to watch and record the outcome of that experiment in the making of the English of to-morrow. We are beginning to know, in the first place, what types of human animal can tolerate and survive the stern conditions of modern urban life. We are learning, still more slowly, what modes of life, what modified structure of the family, of the daily round, of society at large, can offer the adjustment to new needs of life, which human nature demands under this new, almost unbearable strain. We are seeing, more clear in the mass, even if hopelessly involved in detail, the same process of selection going on in the mental furniture of the individuals themselves; new views of life, new beliefs, new motives and modes of action; new, if only in the sense that they presuppose the destruction of the old.

That is our problem in human society at home. And yours, though it has a brighter side, is in its essentials the same. Geographers can tell you something already of the physical "control" which is the setting to all possible societies on Canadian soil. Scientific study of the vanishing remnants of the Redskin tribes may show you a little of the effects of this control, long continued, upon nations whom old Heylin held to be "doubtless the offspring of the Tartars." Sympathetic observation and friendly intercourse may still fill some blanks in our knowledge of their social state; how hunting or fishing—or, in rare cases, agriculture—forms and reforms men's manners and their institutions when it is the dominant interest in their lives. But what climate and economic habit have done in the past with the Redskins, the same climate and other economic habits are as surely doing with ourselves. In the struggle with Nature, as in the struggle with other men, it is the weakest who go to the wall; it is the fittest who survive. And it is our business to *know*, and to record for those who come after us, what manner of men we were when we came; whence we were drawn and how we are distributed in this new land. An Imperial Bureau of Ethnology, which shall take for its study all citizens of our State, as such, is a dream which has filled great minds in the past and may some day find realization. A Canadian Bureau is at the same time a nearer object and a scheme of more practicable size. In the course of this meeting, information and proposals for such a Bureau of Ethnology are to be laid before this section by more competent authorities than I. My task has only been to show, in a preliminary way, what our science has done in the past to stimulate political philosophy, and to determine its course and the order of its discoveries.

"Some men are borne," said Edward Grimstone just three centuries ago, "so farre in love with themselves as they esteeme nothing else, and think that whatsoever fortune hath set without the compasse of their power and government should also be banished from their knowledge. Some others, a little more carefull, who, finding themselves engaged by their birth, or abroad, to some one place, strive to understand how matters pass there, and remaine so tied to the consideration of their owne Commonweale as they affect nothing else, carrying themselves as parties of that imperfect bodie, whereas in their curiositie they should behave themselves as members of this world." It is as "members of this world," I hope, that we meet together to-day.

The following resolutions were adopted by the Committee of Recommendations of the British Association:—

I.—To recommend the Council to represent to the Dominion Government: (1) that it is essential to scientific knowledge of the early history of Canada that full and accurate records should be obtained of the physical character, geographical distribution and migrations, languages, social and political institutions, native arts, industries, and economic systems, of the aboriginal peoples of the country; (2) that scientific knowledge of the principles of native design and handicraft is an essential preliminary to any development of native industries such as has already been found practicable, especially in the United States, in Mexico, and in India; and that such knowledge has also proved to be of material assistance in the creation of national schools of design among the white population; (3) that, in the rapid development of the country, the native population is inevitably losing its separate existence and characteristics; (4) that it is, therefore, of urgent importance to initiate without delay systematic observations and records of native physical types, languages, beliefs, and customs, and to provide for the preservation of a complete collection of examples of native arts and industries in some central institution and for public guardianship of prehistoric monuments such as village sites, burial grounds, mounds, and rock carvings; (5) that the organization necessary to secure these objects, and to render the results of these inquiries accessible to students and to the public, is such as might easily be provided in connexion with the National Museum at Ottawa, which already includes many fine examples of aboriginal arts and manufactures, and might easily be made a centre for the scientific study of the physical types, languages, beliefs, and customs of the aboriginal peoples.

II.—To recommend the Council to urge the Dominion Government to include, in the schedules of the next Canadian census, full inquiries as to precise place of origin, native language, previous status and occupation, year of immigration, and such other information as may be deemed of scientific value for the study of the effects of the Canadian environment upon immigrants of European origin.

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Dear Mr. Clough,—Enclosed please find formal receipt for **your cheque of £10,** *kindly awarded as Prize re A.C.P. Examination. I was agreeably surprised to find myself so distinguished, and further surprised to find myself the recipient of your cheque, for I had not dreamt of such success. I received invaluable help from your Classes in the Scholarship Examination, and knew that I could rely on your Classes pulling me through first time, and I have not been disappointed. In fact, I don't know who would be, provided that they worked systematically through your Course. Thanking you, and wishing your Classes every success.*

Yours faithfully, ROBERT A. WRIGHT.

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45 *Brunswick Square Herne Bay,*
February 6th, 1909.

Dear Mr. Clough,—I cannot tell you how pleased and surprised I was to find myself in possession of a **£10 cheque** *which I received from you this morning as the result of obtaining* **Three Honours** *at the recent A.C.P. Examination. I can only add, in expressing my thanks to you, that no student who works through your course conscientiously can fail to be quite satisfied with the results at the final examination. Will you please accept my sincerest thanks for all the pleasure which your unfailing attention and interest have afforded me.*

Yours gratefully, MARY A. CURLING.

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COLLEGE OF PRECEPTORS.—TEACHERS' DIPLOMA EXAMINATION.

SUMMER, 1909.

THE Summer Examination commenced on the 30th of August, and was held in London and at the following Local Centres:—Birmingham, Bolton, Bristol, Kirkwall, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Plymouth; Dinapore, Jubbulpore, Lahore, Nagercoil, and Ootacamund (India); Harrismith and Umzinto (S. Africa); New Amsterdam (British Guiana); St. John's (Newfoundland); St. Lucia (British West Indies).

The total number of candidates examined was 326.

The following are the names of the candidates who passed in the various subjects: (*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject:—

Theory and Practice of Education.

LICENTIATESHIP.

Barker, A. W.
Barton, B. B.
Bird, W. E. A.
Boughton, Miss O. K.
Brennand, Miss C. I.
Burbidge, P. B.
Butler, J. H.
Cook, F. W.
Craig, R. W.
Dodd, C. B.
Eldridge, F. J. P.
Gardner, E. H.
Gaskin, H.
Gould, F. G.
Griffin, J.
Hambly, W. D.
Hobart, J. W.
Jacobs, G. S.
Lancaster, C.
Launder, G. E.
Luke, W. J.
Merrick, J.
Morris, G.
Peacock, D. B.
Perkins, A. L.
Read, E. A.
Rogers, G. C.
Rogers, J. W.
Saull, W. J.
Sharples, H. R.
Shoosmith, H.
Sunderland, G.
Wall, C. E.
Watson, J.
Willott, D.
Wilson, A. H.

ASSOCIATESHIP.

Alcock, Miss M.
Anderson, J.
Andrew, G. R.
Ascoli, Miss A. M.
Bacon, Miss M. E.
Balls, Miss M. A.
Barker, E.
Bates, A. D.
Benney, W. E.
Blount, A.
Brade, J.
Brett, J. R.
Brittain, J.
Broad, W.
Brook, Miss A.
Brooke, H.
Cadman, C. F.
Chapman, F. B.
Chevens, Mrs. B. M. L.
Cook, A.
Cowen, C. R.
Croome, Miss L. E.
Edley-Morton, C.
English, J. G.
Evans, C. G.
Evans, O.
Facer, Miss E. M.
Fordham, R. R.
Garriock, J.
Girling, T. W.
Goodman, Miss H. B.
Grainger, H. H.
Gray, Miss E. J.
Gray, T. W.
Green, A. L.
Guy, B. B.
Hands, Miss E. M.
Harris, P. H.
Hart, A. H.
Hatchard, Miss A. E. M.
Hawkesworth, H.
Henderson, A.
Hitches, G. J.
Hobson, Miss M.
Hodder, R. F.
Hodgkinson, W.
Holmes, R. H.
Holt, Miss A.
Holt, P. P.
Hood, F. W.
Ignasimuttu, S.
Inkpen, Miss A. L.
Jeffrey, Miss A. M.
Jennings, H. G.
Johnston, H. P.
Jones, M.
Kessel, Miss D.
Kiln, Miss A. R.
Kitson, H.
Langfield, A.
Larkin, Miss I. G.
Le Pévédic, J. M.
Lonsdale, G. W. T.
Martin, Miss F. M.
Martin, R. R. S.
Matthews, Miss K.
McAlister, A.
McCartney, Miss M. C.
McElhatton, J.
Merrick, F. G.
Merrick, Miss G. E.
Moore, Miss M. B.
Nash, F. H.
Nicholson, E. P.
Nicolson, G. A.
Nisbet, W. H.
Noble, A.
Noble, Miss E. A.
Oliver, Miss M. M. K.
Parker, Miss E.
Parkerson, L. S.
Pearce, W. E.
Pickhaver, Miss G.
Pinching, Miss O. E.
Plackett, A.
Ramsay, A. M.
Riches, G. F.
Rixham, Mrs. W. M.
Roberts, E. J.
Roberts, Miss E. L.
Roberts, T.
Robson, J. W.
Rowe, Miss E. M.
Savage, Miss N. M.
Sexton, F. P.
Shaw, F. S.
Skinner, A.
Smith, C. J.
Smith, Miss E.
Speakman, C.
Speed, E. D.
Stafford, Miss A
Stewart, W.
Thackray, C.
Thomas, H.
Tipper, D.
Tompkins, A. G.
Turner, Miss M. M. G.
Vaughan, W. B. G.
Watkin, W. E.
Watson, E. M.
Watts, W. T.
Webley, C. E.
Webster, Miss F. E.
Wells, Miss G. J.
Wheeler, Miss E.
Wilkins, Miss K.
Woodfield, S. P.
Young, R. J.

English Language.

(*Subject No.* 1.)

Alcock, Miss M.
Andrew, G. R.
Atkins, T.
Bacon, Miss M. E.
Barker, A. W.
Barton, B. B.
Birch, H. J.
Butler, J. H.
Clarke, W. E.
Coxon, Miss A.
Dent, E. J.
Edley-Morton, C. (*hon.*)
Escott, S. W. D.
Evans, C. G.
Evans, O.
Fordham, R. R.
Gardner, E. H.
Gaskin, H.
Gee, H.
Gentry, C. W.
Girling, T. W.
Guy, B. B.
Hall, Miss A.
Harris, P. H.
Hart, A. H.
Hatchard, Miss A. E. M.
Inkpen, Miss A. L.
Jennings, H. G.
Johnston, H. P.
Jones, M.
Keast, Miss A. E.
Kitson, H.
Koster, E. V. W.
Larkin, Miss I. G.
Laugher, J. H.
Martin, Miss F. M.
Merrick, Miss G. E.
Moore, G. S.
Morris, Harold H.
Morris, Haydn H.
Nisbet, W. H.
Noble, A.
Noble, Miss E. A.
O'Dowd, Miss M. T. (*hon.*)
Oliver, Miss M. M. K.
Stewart, W.
Stubbs, Miss M. A.
Swell, E. O.
Tipper, D.
Tompkins, A. G.
Towers, T. S.
Vaughan, W. B. G.
Warren, E. L.
Watson, E. M. (*hon.*)
Webley, C. E.
Webster, Miss F. E.
Wells, Miss G. J.
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CONFÉRENCES FRANÇAISES.

SOCIÉTÉ NATIONALE DES PROFESSEURS DE FRANÇAIS.

LES ANGLAIS DANS LE SUD-OUEST.

Par M. GUSTAVE RIGAUD.

LE samedi, 25 septembre, au College of Preceptors, M. L. Béchot a présenté à un auditoire nombreux et choisi M. Gustave Rigaud, avocat du barreau de Bergerac. C'est par une véritable bonne fortune, et grâce à l'amitié d'enfance qui unit le président et le conférencier, que la Société des Professeurs avait le privilège d'entendre un orateur aussi distingué. M. Béchot a rappelé que tout au début de sa carrière, alors qu'il n'était que stagiaire, M. Rigaud avait pris, devant la cour d'assise, la défense d'un assassin, et, bien que la cause fût difficile, avait réussi à emporter l'acquittement de son client. Ce succès explique la situation exceptionnelle que M. Rigaud, ancien bâtonnier de l'ordre, occupe aujourd'hui dans sa ville natale.

Le conférencier avait pris comme sujet "Les Anglais dans le Sud-Ouest," et plus particulièrement "Les Anglais à Bergerac." Ce n'est pas par un excès de patriotisme local qu'il avait choisi ce sujet, car Bergerac a vraiment joué un rôle des plus importants pendant la Guerre de Cent Ans. M. Rigaud a esquissé à grands traits l'importance, à cette époque, de sa ville natale, sa situation stratégique et commerciale, et ce fait qu'elle était la tête de ligne et la capitale de cette partie de l'Entre-Deux-Mers considérée comme la plus fertile devait en faire la convoitise et la proie fatale des partis ennemis. En même temps qu'il parlait de Bergerac, M. Rigaud a donné quelques détails des plus curieux sur les seigneurs des châteaux environnants. Ce n'étaient pour la plupart que de véritables chefs de bandes, tantôt à la solde du roi de France, tantôt à la solde du roi d'Angleterre.

Après ce préambule il a annoncé qu'il divisait sa conférence en trois parties très distinctes: le commencement, le milieu et la fin de la Guerre de Cent Ans. C'est à Bergerac, on peut le dire, que la Guerre de Cent Ans a commencé; et c'est dans l'arrondissement de Bergerac qu'elle a pris fin, car la bataille de Castillon, qui la termina, a été livrée en réalité sur le territoire d'une commune de l'arrondissement de Bergerac.

Il ne nous est malheureusement pas possible de donner une analyse aussi complète que nous le voudrions de cette remarquable étude historique; nous nous contenterons de dire que, en ce qui concerne la bataille et le siège de Bergerac, qui eurent lieu au mois d'août 1345, le conférencier nous a donné des récits de faits pour la plupart assez peu connus, et dont il a tiré de très curieuses conséquences. Ainsi, s'aidant des Mémoires de Froissart, il a montré que la bataille de Bergerac avait été perdue, comme celle de Crécy l'année suivante, par la folle bravoure et l'erreur stratégique des chevaliers français. Ceux-ci, ayant fait sortir des remparts de la ville et ayant poussé devant eux leurs gens de pied, ne trouvèrent rien de mieux pour arriver plus tôt à se mesurer avec les chevaliers anglais que de tuer leurs couteliers afin de faire place nette. La perte de la bataille de Bergerac, nous a-t-il dit, fut cause du siège de Bergerac. Les Anglais, ne pouvant prendre la place par terre, l'attaquèrent par la Dordogne à l'aide de bateaux en cuir bouilli, que, d'après Froissart, ils allèrent chercher à Bordeaux, et qui leur permirent, sinon d'enlever la ville, tout au moins de la menacer assez sérieusement pour que la population civile s'empressât de se rendre. Au sujet de cette reddition, le conférencier a fait une comparaison entre les renseignements que l'on trouve dans les Chroniques de Froissart sur la façon dont l'armée anglaise se comporta vis-à-vis de la ville et des habitants et ceux quelque peu opposés que l'on trouve dans les jurades de la ville de Libourne.*

Bergerac prise par les Anglais allait être reprise de nouveau par les Français vers le milieu de la Guerre de Cent Ans, en 1377. Depuis six ou sept ans l'armée française, commandée nominativement par le duc d'Anjou, mais effectivement par le connétable Bertrand Duguesclin, battait l'estrade autour de la ville; elle avait failli s'emparer de La Linde grâce à une trahison du sire de Badefols qui était gouverneur de la place pour le roi d'Angleterre et qui fut tué par le captal de Buch au moment où il allait ouvrir les portes de la ville au Français. On possède dans les jurades de Bergerac une lettre que Duguesclin écrivait aux consuls de cette ville pour les prier de lui envoyer des vivres à Mouleydier dont il faisait le siège. C'est au mois d'août 1377 que le duc d'Anjou, venant de Toulouse, accompagné par Duguesclin, vint mettre le siège devant Bergerac; la garnison anglaise de cette ville, commandée par Perducat d'Albret, appela à son secours la garnison de Bordeaux commandée par Thomas Felton. Ce dernier, apprenant que les Français étaient allés chercher du matériel de siège à La Réole, essaya de couper l'armée française en deux. La rencontre eut lieu près d'Eymet; Thomas Felton fut pris; et en présence de la défaite de l'armée anglaise il se passa à Bergerac ce qui s'était passé en 1345: la population civile se rendit. Perducat d'Albret, paraît-il, se retira avec ses soldats et alla s'enfermer dans la place forte de Montcuq.

Dans la période qui suivit, Bergerac retrouva un peu de tranquillité. La ville fut reprise par les Anglais en 1435; mais en 1450, Jean Bureau, grand-maître de l'artillerie française, vint de nouveau assiéger la ville, qui s'empressa d'ouvrir ses portes, après avoir égorgé la garnison anglaise. C'était le commencement de la fin de la domination anglaise dans le Sud-Ouest. Trois ans après, Talbot venait se faire tuer à la bataille dite de Castillon. Il commit l'imprudence de rester à cheval après avoir fait mettre pied à terre à ses chevaliers, et ne tarda pas à devenir le point de mire des canons français.

Le conférencier s'est demandé quelle avait été l'influence de l'occupation anglaise dans le Sud-Ouest. Il a avoué qu'à sa connaissance il n'en existait pas, à part la disposition de certaines villes bâties par les Anglais, telles que Libourne, La Linde et Eymet. Il a néanmoins ajouté qu'il avait été surpris, en arrivant à Londres la veille, de voir que les cochers conduisaient en prenant leur gauche. Or dans la campagne du Sud-Ouest, et malgré les règlements du roulage, les bouviers s'obstinent énergiquement à tenir leur gauche, et le conférencier s'est demandé s'il n'y aurait pas là, par hasard, une conservation des usages anglais. En terminant, le conférencier s'est dit que, si les Anglais n'avaient pas laissé de traces appréciables dans le Sud-Ouest, ils avaient du moins gardé un excellent souvenir des productions du pays, notamment du vin, dont au cours de son dernier voyage à Bordeaux un des Lord-Mayors de Londres avait fait un éloge aussi flatteur que mérité.

Des applaudissements ont salué cette péroraison. M. Rigaud a, cela va de soi, la parole facile et convaincante; sa conférence, nourrie de documents puisés aux meilleures sources, a vivement intéressé l'auditoire, et c'est à l'unanimité que des remerciements lui ont été votés.

* Froissart rapporte que l'armée victorieuse se conduisit généreusement, tandis qu'on voit dans les jurades de Libourne que le tiers de la garnison fut passée au fil de l'épée.

THE American Ambassador opened the new buildings of the Cambridge and County School for Girls and the School of Arts and Crafts. Sir George Fordham presided, and was supported by the Bishop of Ely, the High Sheriff (Mr. Newton), the Vice-Chancellor (Dr. Mason), Alderman Spalding, the Master of Trinity (Dr. Butler), the Mayor, and others. The Chairman explained that the buildings completed the construction scheme of the County Council for secondary education. The Hon. Whitelaw Reid, before declaring the buildings open, spoke of the necessity of technical and scientific education. He would, he said, be the last to undervalue the noble work done for the humanities by the ancient Universities of Cambridge and Oxford—might that never be weakened or abandoned!—but in new times there was an imperative call for new duties. This necessity had been felt both in America and in England. They had set about to meet it, and one kind of response was to be found in the new Universities which were inclined to scientific and practical education. It was indispensable, first of all, that the foundation should be well laid by thorough mastery of reading, writing, and arithmetic; but, if a lad was really to make his way among educated rivals, there must be a broader foundation still, and he needed just as much time as could be spared in the secondary school to strengthen and broaden his mind before specializing in the arts and crafts. In fact, he needed to learn everything about something and something about everything. Having referred to the provision for industrial education in America and the favour with which it was viewed by the trade unions there, Mr. Whitelaw Reid expressed his sincere belief that these new departures in the way of more scientific and practical education did promise to turn out in both countries a generation thoroughly trained for the particular work it had to do and able in that field to keep its country abreast of the foremost. He hoped it would also so enlarge the mental horizon of its people that they might realize how infinitely more there was in life than getting a living.

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CURRENT EVENTS.

Fixtures.

AT the Meeting of the members of the College of Preceptors on Wednesday, November 17, Prof. J. W. Adamson will read a paper on the question: "Of what use to the Practical Teacher is the Historical Study of Education?"

* * *

PROF. ADAMS will continue his course on "Convention, Imitation, Tradition, and Suggestion in Education" at the London Day Training College, Southampton Row, on November 6, 13, 20, and 27 at 11.30 a.m. Open without fee to teachers. Admission cards from Prof. Adams. Applicants should state, in full, name and address, and name and address of their schools.

* * *

M. L'ABBÉ MARGUERÉ will address the Société Nationale des Professeurs de Français en Angleterre on "Manning et la Democratie" at the College of Preceptors on November 27, at 4 p.m.

* * *

THE Annual Meetings of the Incorporated Association of Assistant Masters in Secondary Schools will be held on January 5–7—probably at the City of London School. A special subject of discussion will be a Report on the Conditions of Service of Secondary Teachers in Foreign Countries. The annual dinner will be held at Pagani's Restaurant, Great Portland Street, W., on January 6, at 7.30 p.m.

* * *

THE Child Study Society, London (90 Buckingham Palace Road, S.W.), will be addressed by W. C. Sullivan, M.D., Medical Officer of Holloway Prison, on "The Child Criminal," November 18, 8 p.m.; and by Miss M. Frere and Miss C. Grant on "Children's Care Committees," November 25, 8 p.m.

* * *

THE commencement of the course of ten weekly lectures on "Modern Educational Psychology" arranged to be given by Mr. William Brown, M.A., at King's College, has been postponed till January 14, at 8 p.m.

* * *

MR. T. SHARPER KNOWLSON will continue his course of ten lectures on "Journalism (Free Lance)" at the Central Y.M.C.A. (346 Strand, W.C.), on November 5, 12, 19, and 26, at 7.30 p.m.

* * *

MR. JOHN WEATHERS, Middlesex County Instructor in Horticulture, will continue his course on "School, Cottage, and Allotment Gardening" for School Teachers, at the Hall, Ealing Green, on Saturdays, at 11 a.m.

* * *

PROF. W. P. KER, LL.D., University College, London, will deliver the Leslie Stephen Lecture in the Senate House at Cambridge, on November 11, at 5 p.m.

* * *

THE Creighton Memorial Lecture will be delivered by Prof. J. B. Bury, of Cambridge University, at University

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College, London, on November 12, at 5 p.m. Subject: "The Constitution of the later Roman Empire."

* * *

THE Conference on Educational Reform proposed to be held this month under the auspices of the National Federation of Ratepayers is postponed. "The education question from the Federation's point of view has assumed a new phase by the recent pronouncement of the organ of the National Union of Teachers endorsing the educational policy of the Trade Union Congress."

Honours.

THE University of Oxford has conferred the honorary degree of D.C.L. upon his Excellency Osman Hamdy Bey, Director-General of the Imperial Ottoman Museum of Antiquities, Constantinople.

* * *

THE title of Professor Emeritus has been conferred upon Dr. A. V. Dicey, on his resignation of the Vinerian Professorship of English Law in the University of Oxford after a tenure of nearly twenty-seven years.

* * *

DR. WILLIAM SANDAY, Lady Margaret Professor of Divinity, Oxford, has had his portrait presented to him by a number of friends. The artist is Mr. L. C. Taylor.

* * *

THE REV. W. H. HUTTON, M.A., Fellow of St. John's College, Oxford, has been presented with his portrait, which was subscribed for by two hundred members of the College that had been taught by him during the twenty-five years when he was Modern History Lecturer and Tutor. The artist is Mr. G. F. Kelly.

* * *

AMONG the scholars that received the honorary degree of Ph.D. on the occasion of the recent jubilee of the University of Leipzig was Dr. A. W. Ward, Master of Peterhouse.

* * *

THE University of Manchester has conferred the honorary degree of LL.D. upon the American Ambassador; Sir Robert Stout, Chancellor of the University of New Zealand; Sir Alfred C. Lyall; and Dr. Otto Wallach, Professor of Organic Chemistry in the University of Gottenberg.

* * *

THE University of Munich has conferred the honorary degree of Ph.D. upon Mr. F. W. Thomas, M.A., Librarian of the India Office, and Professor of Tibetan in the University of London, University College.

* * *

THE Czech University of Prague has conferred the honorary degree of Doctor of Philosophy upon a number of foreign professors, including W. R. Morfill, Professor of Slavonic Languages at Oxford; John Edward Marr, F.R.S., University Lecturer in Geology, Cambridge, and ex-President of the Geological Society; Sir Archibald Geikie, Secretary to the Royal Society; H. Gibson, Professor of Chemistry and Director of the Chemical Institute at Manchester University; Francis Darwin, Cambridge; John Burnet, Professor of Greek, St. Andrews; and Dr. Theodore William Richards, Professor of Chemistry and Director of the Chemical Institute at Harvard University.

* * *

THE Churton-Collins Memorial Fund is to be devoted to establishing prizes for literature in connexion with the extension work of Oxford, Cambridge, and London Universities, Birmingham University being left to its own choice of disposal of its share; and to placing a portrait of the late Professor in the Bodleian Library and a brass tablet in Balliol College Chapel or in Oulton Church. Complete sets of the Professor's works will also be distributed to certain University and other libraries.

* * *

AT the inauguration of Dr. A. L. Lowell as President of Harvard University (October 6), the honorary degree of Doctor of Letters was conferred upon the Right Hon. James Bryce, the British Ambassador to the United States, and the following representatives of British Universities:—Prof. W. A. Herdman, F.R.S., Dr. W. N. Shaw, F.R.S., Dr. G. A. Gibson, Prof. J. Biles, and Mr. J. Willis Clark.

* * *

A MEMORIAL window has been placed in Bute Hall, University of Glasgow, to commemorate the late Principal, the Rev. Dr. Story. It was designed and executed by Mr. Douglas Strachan, Edinburgh.

Endowments and Benefactions.

DR. G. B. LONGSTAFF, of New College, Oxford, has given £2,400 for an additional endowment of the Hope Department of Zoology in Oxford University.

* * *

CLIFTON HILL HOUSE, formerly the residence of Dr. Symonds, has been purchased as a hostel for Bristol University. Two ladies have subscribed £2,000 towards the cost of the undertaking.

* * *

THE Committee appointed by the Chancellor of the Exchequer to consider the apportionment of the £15,000 additional grants which he proposes to give to the University of Wales and its three constituent colleges have recommended the following allocation — viz., £1,500 per annum to the University for Fellowship in Arts and Sciences; £1,500 a year to the Cardiff Medical School; £4,000 each to the colleges at Bangor, Aberystwyth, and Cardiff to provide increased salaries to the staffs, further equipment for libraries and museums, and provision for tutorial assistance; and £500 each towards establishing a pension scheme.

* * *

MISS TALBOT, Margam Castle, has given £1,000 towards the building fund of Cardiff University College.

* * *

THE University of Glasgow has received, from Miss Pollock and Mrs. Gilchrist, sisters of the late Dr. Robert Pollock, Laurieston House, Pollokshields, an intimation that they intend, in accordance with their brother's wishes, to bequeath to the University £10,000 for the foundation of a Lectureship in Materia Medica for the encouragement of research.

* * *

DR. WILLIAM DEY, for many years a member of the University Court, Aberdeen, and his brothers have given £2,500 to the University to found a scholarship in Education in memory of their father.

* * *

SIR WILLIAM OGILVY DALGLEISH, Bart., of Errol Park, has made a second gift of £5,000 towards the erection and equipment of the new Technical College, Dundee; and he has also contributed £1,000 towards the purchase of the old Technical Institute buildings.

* * *

AN anonymous donor has given £6,000 towards the purchase of the Scots College, Paris, by the Franco-Scottish Society.

* * *

MR. CARNEGIE has given £20,000 to the general funds of the McGill University, Montreal. The gift was originally

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made on condition that £100,000 should be raised from other sources, and the condition has now been satisfied, largely through the generosity of Lord Strathcona.

Scholarships and Prizes.

At Oxford University scholarships and exhibitions will be offered for competition as follows: *Classics*—December 7: Balliol; Exeter, Oriel, Brasenose, and Christ Church; Queen's, St. John's, Hertford, and Keble; Lincoln. December 14: University, New College, and Corpus; Merton; Trinity and Wadham. January 11: Jesus. March 15: Magdalen. *Mathematics* — December 7: Balliol, Queen's, Corpus, and St. John's; Merton, Exeter, New College, and Hertford; Hertford. January 11: Jesus. March 1: Magdalen, Brasenose, Christ Church, and Worcester. *Natural Science*—December 7: Balliol, Christ Church, and Trinity; Merton, Exeter, New College, and Hertford. December 14: University, Lincoln, Magdalen, and St. John's. January 11: Jesus. *History*—December 7: Balliol and New College; Queen's, St. John's, Hertford, and Keble; Lincoln. December 14: Magdalen and Corpus; Trinity. January 11: Jesus. March 15: Merton and Brasenose.

* * *

The next combined examination for 67 entrance scholarships and various exhibitions at Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel Colleges, Cambridge, will be held on Tuesday, December 7, and following days. Forms of application (to be sent in by November 30) and further information may be obtained as follows:—Pembroke College, Mr. W. S. Hadley; Gonville and Caius, the Master; King's, Mr. W. H. Macaulay; Jesus, Mr. A. Gray; Christ's, Rev. J. W. Cartmell; St. John's, the Master; Emmanuel, the Master.

* * *

A combined examination of non-resident candidates for open scholarships, exhibitions, &c., will be held at Trinity College, Clare College, Trinity Hall, Peterhouse, and Sidney Sussex College, Cambridge, on Tuesday, December 7, and following days. A revised notice has been issued with regard to the emoluments to be offered at Trinity. They will comprise about twelve entrance scholarships of £80, about ten exhibitions of £40, and some sub-sizarships. Sizarships as such will no longer be offered. Forms of application may be obtained from Dr. W. M. Fletcher, Mr. W. C. D. Whetham, Rev. E. W. Barnes, and Mr. R. V. Lawrence, the tutors of Trinity College; Mr. W. L. Mollison, Clare; Mr. G. B. Shirres, Trinity Hall; Mr. H. J. Edwards, Peterhouse; and the Master of Sidney. Entries should be made by November 13.

* * *

The *Western Mail* (Cardiff) offers to Welsh students a Music Scholarship of £50 a year for three years.

* * *

Merchant Taylors School, London, offers 5 entrance scholarships for boys under fourteen. Competitive examination begins November 30.

Appointments and Vacancies.

The Rev. Claude H. W. Johns, M.A., Fellow of Jesus College, and Lecturer in Assyriology at Queen's College, has been elected Master of St. Catharine's College, Cambridge.

* * *

Mr. Henry Spenser Wilkinson, M.A. Oxon. and Lond., barrister-at-law, principal military writer in the *Morning Post* since 1895, and voluminous author on military history and policy, has been appointed to the Chichele Professorship of Military History at Oxford.

The Rev. George Adam Smith, D.D., LL.D., Professor of Old Testament Language, Literature, and Theology at the United Free Church College, Glasgow, has been appointed Principal of the University of Aberdeen.

* * *

At Manchester University, Mr. B. M. N. Perkins, B.A., of Gonville and Caius College, Cambridge, has been appointed Senior Assistant Lecturer in French Language and Literature; and Mr. C. P. Lapage, M.D., Lecturer in Observation of Children and in School Hygiene.

* * *

In the University of Birmingham, Mr. Jordan Lloyd, F.R.C.S., M.D., &c., has been appointed Professor of Surgery; Mr. Peter Thompson, M.B., Ch.B., Professor of Anatomy; Mr. F. W. Gamble, D.Sc., F.R.S., Professor of Zoology; Miss J. S. Bayliss, D.Sc., Lecturer in Botany; Mr. H. B. Keene, B.Sc., and Mr. F. W. Aston, Demonstrators of Physics; Mr. T. F. Wall, M.Sc., Assistant Lecturer in Electrical Engineering; and Mr. C. S. Fox, B.Sc., Demonstrator of Coal Mining.

* * *

At University College, Aberystwyth, M. J. L. André Barbier, L. ès L., Lecturer in French, Manchester University, has been appointed Professor of French Language and Literature; Mr. Alfred E. Codd, B.A., Assistant Lecturer in Latin, in place of Mr. E. D. T. Jenkins, resigned; Dr. G. A. Schott, Head of the Department of Applied Mathematics; and Mr. J. S. G. Thomas, B.Sc., Lecturer and Demonstrator in Physics, in place of Dr. Schott.

* * *

Applications for the Professorship of Physics in Canterbury College, Christchurch, N.Z., should be lodged with the High Commissioner for New Zealand, 13 Victoria Street, London, S.W., by November 17. £650, without fees.

* * *

Mr. James M. Crofts, M.A. Cantab., B.Sc. Lond., lately Head Master of the Johannesburg College, has been appointed by the Joint Matriculation Board Organizing Secretary for the Inspection and Examination of Schools.

* * *

Mr. J. Finnigan, B.A., B.Sc., has been appointed Secretary to the Senate of Queen's University, Belfast.

* * *

Miss Alice Parkin has been appointed Organizing Secretary for the courses in Home Science and Economics at King's College for Women, Kensington.

* * *

The Rev. David Smith, D.D., has been appointed Professor of Theology in Magee College, Londonderry.

* * *

Mr. M. A. Gerothwohl, Ph.D., D.Litt., Professor of Romance Languages in Dublin University, has been appointed Lecturer in French in the University of Bristol.

* * *

Mr. A. P. I. Cotterell, M.I.C.E., has been appointed Lecturer in Sanitary Engineering in the University of Bristol.

* * *

Mr. A. H. Dainton, B.A., Scholar of Jesus College, Oxford, has been appointed Lecturer in History at St. David's College, Lampeter.

* * *

Mr. James Johnston, M.A. Glas., has been appointed Lecturer in Philosophy at Westfield College, University of London.

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Mr. E. L. Milner-Barry, M.A. Cantab., has been appointed Lecturer in German, and Mr. E. H. Harper, B.A., T.C.D., Assistant Lecturer in Mathematics, at University College, Bangor.

* * *

The Rev. S. Nowell Rostrom, M.A., St. John's College, Cambridge, has been appointed Principal, and Mr. J. Hartley Wadsworth, M.A., Jesus College, Oxford, Classical Tutor, of St. John's Hall, Durham.

* * *

The Rev. C. Chapman, M.A. Lond., LL.D., Principal of Western College, Bristol, since 1876, intends to retire in June next.

* * *

At the Heriot-Watt College, Edinburgh, Mr. A. R. Horne, B.Sc. Lond., has been appointed Assistant Professor of Engineering in place of Mr. W. Campbell Houston, resigned; Mr. John T. Wright, M.I.M.E., Lecturer on Prime Movers, in place of Mr. Horne; Mr. W. G. Duncan, M.I.M.E., Assistant in Engineering, in place of Mr. Wright; Mr. H. Curtis, Lecturer on Banking, in place of Mr. Moscrip; Mr. Robert Leslie, Lecturer in Economic Science, in place of Mr. A. B. Clark; Mr. A. D. Robertson, teacher of Lithography, in place of Mr. Flatt; and Mr. Matthew Shirland, Mus. Bac., F.R.C.O., Lecturer on the Theory of Music, in place of Mr. Grieve.

* * *

Mr. D. J. Taylor has been appointed Lecturer in Pure Mathematics, and Mr. A. B. Jones, B.A., B.Sc., Ph.D., Assistant Lecturer in the Day Training Department, at University College, Cardiff.

* * *

The Rev. Thomas F. Hobson, M.A. Oxon., Head Master of King's School, Rochester, has been appointed to the Vicarage of Leatherhead.

* * *

Mr. J. Buckley, Head Master, P.-T. Centre, Wigan, has been appointed Head Master of the Secondary School, Woodhouse.

* * *

Mr. James McCarter, B.A. Lond., second master, Church Institute School, Bolton, has been appointed Head Master of Farnworth Grammar School.

* * *

Mr. John Rounsefell, B.A., B.Sc. Lond., assistant master, Hoe Grammar School, Plymouth, has been appointed Head Master of Shebbear College.

* * *

Mr. Charles Roland Skrimshire, M.A. Oxon., assistant master, Bradford Grammar School, has been appointed Head Master of the English High School, Constantinople.

Literary Items.

Messrs. Dent announce a new series of some of the greater and some of the less known works of the Renaissance period—"The Renaissance Library"—under the editorship of Mr. Edward Hutton. The first volume will be Marlowe's "Hero and Leander," from the edition of 1584 in the British Museum. A new fount of type has been specially designed for the series after a Venetian type of the fifteenth century.

* * *

Messrs. A. & C. Black will shortly publish "Natural and Social Morals," by Prof. Carveth Read, M.A., of University College, London—"an attempt to explain the principles of morality in as close a relation as possible to human life."

The Oxford University Press will publish immediately a "History of Secondary Education in Scotland," by Mr. John Strong, Rector of Montrose Academy, who has had access to documents and facts that throw new light on the important parts of the period covered.

* * *

The Rev. J. O. Bevan, M.A., F.G.S., &c., Rector of Chillenden, has in the press a new volume—"The Birth and Growth of Toleration, and other Essays." It will be published presently by Messrs. George Allen & Sons.

* * *

Messrs. Duckworth announce a translation of Prof. Boutroux's work on "Science and Religion in Contemporary Philosophy," by Mr. Jonathan Nield, whose "Guide to Historical Novels" is well known.

* * *

Messrs. Jarrold announce a new "Life of John Milton," by Mr. Grinton Berry, M.A., in their "Men of Fame" series—a series designed to meet the requirements of secondary schools, young students, reading circles, &c., at a popular price.

* * *

The souvenir of the Conference of the National Union of Teachers to be held next year at Plymouth is to be published by Messrs. Jack. The volume will be entitled "The Book of Plymouth," and will contain much interesting information, with plenty of good illustrations.

* * *

Prof. Foster Watson contributes to the October number of the *Nineteenth Century* a very interesting paper entitled "A Suggested Source of Milton's 'Tractate of Education.'" The "suggested source" is Vives, whose views on the education of girls and of boys Prof. Foster Watson recently presented to our readers.

* * *

A new shilling monthly, *The Local Government Review* (Effingham House, Arundel Street, Strand, W.C.), appears this month. A strong staff will handle the great social problems with which local government is directly concerned. Education will be a prominent topic.

General.

The Judicial Committee of the Irish Privy Council dismissed the petitions presented under the Irish Universities Act, 1908, by the Rev. John MacDermott, the Rev. John J. Magill, Lord Londonderry, and others, praying that the statutes of the Queen's University, Belfast, so far as they provide that Scholastic Philosophy shall be one of the subjects of the Faculty of Arts, be disallowed.

* * *

Natal is erecting a University at Pietermaritzburg, which will start with five Professors—for Classics, English and Philosophy or History, Modern Languages, Mathematics, and Physics and Chemistry. It is interesting to note that the Professor of Modern Languages must be conversant with Dutch.

* * *

The St. George's Classes, Edinburgh, which have very successfully prepared pupils by correspondence for the St. Andrews L.L.A. for more than thirty years, have established themselves also at Maltravers House, Arundel Street, Strand.

* * *

Dr. J. C. O'Connor (17 St. Stephen's Square, Bayswater, W.) offers to deliver a free lecture on Esperanto before "any organization, body, society, or class in which teachers are interested," within a radius of thirty miles from Charing Cross, at any hour or on any day except Sunday.

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The Council of the Hellenic Society propose the formation of a new society for the promotion of Roman or Latin studies. "The scope of such a society would be ancient Roman civilization in all lands of the Roman Empire, together with its survivals in Italy and Western Europe, down to the end of the Middle Ages," without interfering with societies working on Roman Britain. Apply to Mr. J. ff. Baker-Penoyre, Secretary of the Hellenic Society, at 22 Albemarle Street, W.

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A lakh of dollars (£8,750) has been collected in the Canton district, and forwarded to the Governor of Hong-Kong, as a contribution towards the endowment fund of the Hong-Kong University.

THE RELATIONS BETWEEN HEADS OF SCHOOLS AND PARENTS.

At the Evening Meeting of the members of the College of Preceptors, on Wednesday, October 20, Prof. Adams in the chair, Mr. W. Campbell Brown, M.A., F.C.P., introduced a discussion on the above subject. He said:—

First of all, let us consider for a moment what is the real position of the school—throughout I shall speak of the secondary *day* school—in education. It is almost axiomatic that the home and the family are the central and starting-point of all education, and, under proper conditions, the influence of the home should be throughout the pupillary stage the main and determining factor in all education. Presumably, in a primitive state of society the whole duties of the education of the young would fall upon the parent, but with the specialization of duties, consequent upon social and national development, some of the duties of the parent to his offspring must be handed over to others, able to give the whole of their time to such work. This, of course, is the main point of view from which the parent regards the school. He regards the school as a means of providing for his son that portion of his son's training and education which he himself cannot give, through lack of either skill or opportunity. Now, every parent realizes, more or less dimly, that the home and the family have a share in the care and education of the young. The stress the parent places upon this home training varies enormously, as do also the results which he expects to get from it. In any case—and this forms the crux of the whole situation—each and every parent expects the school to provide such an education as will complete the training of his children, and, in many cases, parents even expect, or, at any rate, hope that the school experience of the child will be such as not only to fill up all the individual gaps in his home training, but even to cure the results of faulty management. The parent regards the school from—if, for want of a better word, I may call it so—an individualistic standpoint. The school must provide for each and every individual just what he needs. On the other hand, this is not the point of view of the State for the children of which the schools are provided. The State regards her schools as institutes, provided either by herself or by others, to ensure the spread and growth of national *Kultur*, and in the effort to ensure progress in each generation a definite standard is fixed, to which the schools must endeavour, by hook or by crook, to bring all their pupils before they pass altogether from the school influence. That this standard should automatically rise from generation to generation is in the nature of things. It therefore follows that this view of the aims of a school may be, and indeed often is, diametrically opposed to the individualistic one of the parent as mentioned above.

In between these opposing forces stands—or rather should stand—the head master, and, having regard to the fact that he has to consider still other, as it were, secondary claims of no mean importance, his position is not an easy one if taken up seriously and conscientiously. I use the word "conscientiously" advisedly, for it is possible for him to shirk the whole of his responsibilities by saying, as it were, to each individual: "My dear fellow, I'm sorry for you, of course, but it is the rule. You must go through the mill the same as everybody else"—undoubtedly a valuable maxim if applied judiciously, but a wicked one if applied in anything like a wholesale manner. We may borrow a term from the manufacturing trade and speak of this system as an attempt to standardize the children—with, however, this great difference: that, whereas in the manufactures there is no limit to the amount of standardization that may take place, given a large enough output, there is in education a very early limit imposed by the idiosyncrasies of the individual. Such standardization is at its maximum at present in our elementary schools; the larger the classes and the more rigidly codes are carried out, the more standardized is the work.

On the other hand, there is great mental and moral value to the individual in being compelled, to *some* extent, to conform to a given standard. It is a disciplinary training necessary for the child's future life. School has often been called a world in miniature, and in this respect it certainly is so, training the child, as it does, to live *with* others and for others. It is at school that he learns to balance the claims of the individual with the more or less opposing demands of his social surroundings. To put it in short, he should learn to work and play to the utmost of his ability, but in all to "play the game."

Fortunately for the teacher, all parents realize this more or less, and are aware that every child that comes into a school has to go "through the mill" to some extent; for, however much his teachers may consider him specially as an individual, his fellow-companions certainly will not do so. With a natural inexperience due to youth, they will measure the new-comer by a most rigid standard, long since become traditional, and one to which he soon learns the advisability of conforming.

The nature and character of this social standard to which the child is made by his classmates to conform is all that we include under that vague and ill defined term, "tone." To the head master's position in regard to this tone I shall have occasion to refer again. Suffice it now to say that it is a matter over which he can, if he cares to set about it in the right way, exert a very great influence.

Let us now turn to the practical side of this question and discover how the head master is able to steer between the Scylla and Charybdis of the home and school demands. The parent, we have seen, realizes the right of the school to insist on a measure of uniformity, and the teacher sees the absolute necessity, let alone justice, of variety. Who shall hold the balance between them? Personally, I think this is the chief duty of the head master, though I am quite aware that in different countries and in different schools this work also falls sometimes on the individual teachers, sometimes on special teachers each responsible for a certain number of pupils.

If the school is not too large, there is no doubt that the head master should be wholly and solely responsible for the school to the parent. I trust that, in these days of Boards of Education and Local Education Authorities with their codes and schemes, I shall be pardoned for stating so plainly that there *is* a responsibility on the part of the school to the *individual* parent, implying, as it does, that a parent has a right to state his wishes with regard to his children, with some hope of seeing those wishes carried out. Personally, I think that it is only right that a parent should have ideas as to the education of his children, and it is the duty of the head master to listen to them and either to carry them out whenever desirable and possible, or to explain carefully to the parent why they are not expedient. I may have laboured this point of the justice of the claim of the parent to be heard, but I have done so because latterly, in my experience amongst men entrusted with the management and control of local and general educational matters, I have noticed a strong tendency to ignore the parent. This state of affairs undoubtedly arises from the fact that public management of educational affairs has commenced from below with the education of the illiterate classes, and I fear it will be many years before the conduct of secondary education is freed altogether from this undesirable bureaucratic interference. In the meantime, the head master of the present day finds himself once more holding the balance, this time between his pupils and their best interests on the one hand and the still more or less stereotyped demands of the authorities on the other.

I should like, before passing on, to give an instance in point. The head master of a modern school about to undergo a full inspection had, of course, to send up his scheme of work. In this scheme space was left for two fourth forms each with successive grades of work, the classification being mostly based on the mathematics. The boys in these classes had been mostly admitted together at a much lower stage, and at the beginning the difference of standard between the two classes scarcely represented more than a term's work. Now all teachers are

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aware of the varying capacities not only of individual pupils, but of classes as a whole, and it happened that the lower division was by far the smarter class. The head master not only permitted, but encouraged the teacher to pull this class up to the standard of the upper division in order that, when the change to the fifth form should take place, the boys could be re-sorted into upper and lower divisions of that form. This state of affairs is undoubtedly open to criticism from a high pedagogic standpoint, and you will perhaps not be surprised to hear that it was severely criticized by an inspector. But on what grounds? Namely, that it was so undesirable to depart from the scheme of work laid down for the class—that, if each year's scheme of work had been as rigidly kept to as it ought to have been, it would not have been possible.

There is no doubt that in actual practice the head master's responsibilities as between parent and school are very complex, and he will need to exercise the utmost tact and discretion in all that he says and does. In the first place there should be absolute confidence between head master and parent. This would imply at the outset a full and weekly report from the school to the home. The report should be of such a nature as to give the parent a full and clear idea of the boy's work and behaviour for the week, without causing confusion by the inclusion of too many details. Some system of signature will ensure that these reports are seen by the parent, and an inspection of the report and countersigning by the head master each week will serve a manifold purpose—first, of keeping him in touch with every one of his pupils and of letting them feel that their head is personally interested in them, also of indicating to the parent the responsibility of the head master for each individual pupil under his care.

With some such system it is possible for the head master to communicate at intervals, weekly if necessary, with the home; and, if the pupils find that the home and the school are, as a result, invariably pulling in the same direction, a high standard of discipline and work can be readily maintained amongst them. I have said, *if* the pupils find the home and school working in harmony. Of course, cases will and do arise in which the home either does not bother to support the school, or even—but fortunately much more seldom—acts consciously or unconsciously in a manner subversive of school discipline. Though the latter is undoubtedly the greater evil, I really think the former is by far the more difficult to cope with. I am thinking at the moment of those parents—unfortunately there are a few about—who send a boy to school and consider that, for the time being, as far as his education is concerned, they are freed from all responsibility, and in consequence need take no further interest in the boy's doings. Under these circumstances, the boy's work and behaviour are seldom good, and the head master finds himself compelled, either to take the whole responsibility and ignore the very existence of the parents, or—and this is undoubtedly the better course if it can be carried to a successful issue—by some action force the parents to a realization of their responsibility.

I say most emphatically that the latter course is the better one, if only because it may have wider reaching results, long after the school years are past. Exactly how this stimulation of the home is to take place will depend very much on circumstances, and once more much tact and discretion must be exercised. The slightest false step will bring irretrievable disaster. The character of the boy himself, the character and standing of the parents and the circumstances of the family, such as the existence of elder or younger brothers and sisters—these and many other points must be considered before definite action is taken.

I can recall an instance of how on one occasion I brought a pupil's indifferent parents to book. Remarks in the weekly reports had obviously met with little or no support, nor even a strongly worded remark on the report at the end of the previous term to the effect that the boy's education could not be continued unless marked improvement were shown. In a desperate case like this, the head master is in the horrible position of deciding between the individual and the school. Unless an alteration, and that a speedy one, took place, school tone and discipline would suffer, and it almost seemed as if the boy would have to be dismissed. There was not the slightest doubt in my mind that the fault was not really the boy's, and though actual dismissal might give him such a lesson as to cure him, on the other hand it might, and more probably would—considering the home—ruin him altogether. Now I may add, for the more complete understanding of this case, that it has been my belief that a thrashing at school should not be lightly given, and I have always let it be clearly understood that no boy in the school should ever be thrashed twice. The incurring of the penalty a second time would involve instant dismissal. Now, the boy in question had already had his one thrashing, and therefore there seemed no other course open but to dismiss him, and this I was loath to do for the reason already mentioned. One day the boy himself brought the matter to a head, and I sent him off home at once with a note to his father to the effect that he was not to return to school unless the father could send me a written undertaking that for the rest of the time his son was at school he would see that his conduct and work were exemplary. I am glad to say they have been so.

This would not be successful in every case, and sometimes it seems desirable to suggest that the boy needs the regular and invariable discipline of a boarding school. It may be urged against this course that it is a confession of failure on the part of the day-school head master. Such a contention is made in absolute ignorance of the difference in circumstances between the two classes of schools and of the much greater limitation to the scope of action of the day school. The want of success with the given boy may be entirely due to the home, and it rests with the head master, if unable to arouse the parents to a sense of their duty, either to endeavour to put himself in the position of a boarding-school master and act altogether *in loco parentis*, or to suggest, as delicately as the case may demand, the placing of the boy in a good boarding school. Now, experience has shown me that in cases such as these the head master of a day school, if unable to secure some measure of co-operation on the part of the parent in stimulating an indifferent boy, will find that the mere fact of the existence of the indifferent home makes an almost insuperable barrier to real progress. Fortunately—and here I am speaking, I am glad to say, from personal experience—such sad cases are rare, and when they do occur are, more often than not, due to some deep-seated trouble in the home.

We thus see that a cordial relationship between head master and parent is of the greatest value in ensuring an even training and stimulus to each individual in the school, and it is obvious that a head master, as an expert in the management and control of children—other than his own, I admit—can all the more on that account give much unbiased advice to a parent as to his children.

It is only natural that one should dwell on the value to both the pupil and the parent of a cordial relationship between parent and head master; but there is another side to the question, and one worthy of the greatest attention: the great value it has to the head master both personally and officially. It aids him, first of all, by justifying or correcting the impressions he has formed of his pupil. If he finds them more frequently justified, his self-reliance and powers are strengthened, and in those cases where he is led to modify his opinions his experience is greatly increased. Not only the pupil himself, but the school as a whole, will profit accordingly.

Through the parents, a head master may discover any one moment, by judicious feelers in one direction or another, the general effect produced by any given course of action which he has taken and of which he is anxious to test the effect. Perhaps the most awkward, and withal almost the most important position in which the head master stands is between the pupil and parent on the one hand and his staff on the other. The utmost discernment and tact are required at times—the former to get an absolutely just view of the facts that may be brought to his notice, the latter to adjust the claims fairly and without undue friction. The head must, of course, support his staff, justifying them wherever possible; but he must not, in his efforts to speak in their favour, make absurd or trifling excuses where he knows they have acted wrongly. Far better to acknowledge a mistake than to excuse it. In either event the head master then has the task of seeing that the error is rectified without feeling of annoyance or friction on the part of the master. I need not dwell further on this point. It is all wrapped up in one word—tact: tact to select the wheat from the chaff in what he hears from the parents, tact to deal with each matter in the one and only way possible.

I should like to refer to a system which I believe has been tried in German schools, of holding meetings of parents with the staff, either for the purpose of hearing a set address upon school matters, followed by general discussion and conversation, or for mere informal talk and discussion between staff and parents. I have, unfortunately, not been able to get any information as to where these have been tried nor how far they have been success-

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ful, but I am disposed to think that such formal gatherings would not be likely to be successful in this country. Probably far better results would and do accrue from the unofficial meeting of parents and staff upon the playing fields and at the social gatherings that ought to be a feature of every day school.

Up to the present I have dealt with the question as if it had been assumed that the only interest common to the parent and the head master is the welfare of the individual pupils concerned. There is no greater mistake than to make such an assumption. However much the head master may wish to individualize in his treatment of his pupils, there are certain clearly defined limits which he knows he must not pass. The parents of his pupils, as a whole, must be made to realize that, while he is not only willing, but even anxious, to give full credit to differences of character, a certain definite standard must be set up and maintained to which all his pupils must at least attain. The more local the character of the school, the easier is it for the head master thus to create the tone and tradition of a new school or to raise that of one in which it may be partly lacking, and the cause of its being easier lies in the greater support that the head master is able to get from the parents when they live in the more immediate neighbourhood of the school. Some of them, perhaps, in a fussy way may be disposed to give too much support, but one can afford to smile at the absurdities that may arise in this way, while at the same time drawing one's own inferences and conclusions.

Having created such a definite moral code and standard, it will be found that parents are quite willing to support it to the fullest; and even in cases in which a great personal sacrifice is involved, I have found fathers support one's action—even if with regret—at any rate with conviction of its soundness. I will cite one instance in point. On one occasion during the years when I felt I was building a new tradition, I had had considerable trouble of a kind, and I felt it incumbent upon me to give a general warning that, unless the trouble ceased altogether, I should have to make an example of the boy concerned if it occurred again. Unfortunately, it did recur, and I wrote to the father, explaining matters and requesting him to remove his boy at once. The father called to see me and begged me to reinstate his boy, as, indeed, under the circumstances, any father might have done. I was bound to refuse—firmly, if kindly—and I had the gratification of hearing from the father's lips afterwards that, though in his own boy's case he had naturally done his utmost to get me to go back on my word, he acknowledged I was quite right in refusing to alter my decision.

Fortunately, one seldom has occasion to put such support to the test, but I am of opinion that such a full measure of support can only be obtained by the fullest confidence between the head master and the parents, not only individually, but as a whole. How necessary, then, it is that the head master should have a high standard, for, with such intimate relationship between him and the parents, they get eventually to measure his standard and act accordingly. If this standard is high, they will, consciously or unconsciously, bring their children up to it, and the tone of the school will rise with it and form a good training ground for the children in the healthy atmosphere of mutual respect of head master and parent.

Mr. Hawe said the influence of school upon character formed a most important subject for consideration, and, unless the parent actively co-operated with the head master in the work, the tone of the school could not really be high. In his own experience, he had always found parents ready to co-operate with him in his efforts for the training of boys in school and out of school, and when once a good tone was established it would undoubtedly have its effect in all the relations of life. He agreed with Mr. Brown that private-school masters were quite willing to listen to the suggestions of parents, with a view to carrying them into effect, but principals whose schools were efficient were nevertheless in no sense to be regarded as under the dictation of parents.

Mr. Gutteridge observed that, in his opening remarks, Mr. Brown had dealt with the influence of the home, and also with the apparent neglect of the wishes of parents in some of our State schools. Speaking as a head master, he had always found that, in any difficulty in dealing with a boy at school, the father was disposed to relegate his parental functions to the mother. Parents, no doubt, were apt to complain that head masters in large schools were too unapproachable. That, of course, where it existed, was a defect, as there would be a weakening of that co-operation which should exist between home and school. Sometimes there seemed a difficulty in persuading parents that the school, particularly when a boy was leaving, was not a kind of employment agency. He had tried to impress upon parents that, if they did all they could to form their boys' character from the beginning, it would be easier for the head master to give recommendations to employers. In connexion with the day school there was the difficulty of home lessons — how they were to be done and what was to be done when boys systematically neglected them. He used to send round weekly a printed notice to parents asking them to state the amount of time devoted to home lessons each night. Thus some restraint was placed on the parents as well as on the boys, and it was often found to have a good effect where home lessons had previously been neglected. He gave, on the blackboard, an example of a weekly position list in which, in addition to marks for the work done, there was also shown, by means of letters, the conduct of the pupils in and out of school.

Mr. Addis could not agree with the opener's view of the desirability of confabulation and intercourse between parent and head master, as he was inclined to think that such intercourse would rather tend to lessen the confidence of the parent in the conduct of the school. The parent ought to look upon the school as a piece of first-rate machinery which had been tried and tested by agencies other than his own, and the parent should be made to feel that in sending his boy he was entrusting him to a competent institution, and that it was not his province to meddle with the methods or the rules or the discipline of that institution. The great point was that parents and boys should be made clearly to understand that, owing to the very nature of a school, one thing must be standardized, and that was obedience. Boys should recognize that nearly all school questions resolved themselves into obedience. The question of not doing home work was a question of disobedience; any infraction of rules was disobedience; bad writing was disobedience; and when a parent was inclined to think that his boy was being unjustly treated, the result of the interview with the head master generally was that the parent went away with the idea that the boy had, after all, been disobedient. If the parent could show the head master after the interview that it was not a case of disobedience on the part of the boy, then the head master would have reason to change his attitude or perhaps his method; but the important point was that the boy should clearly understand that the ground of offence was disobedience. He spoke from the dual position of head master and parent, and he always thought that the less he had to say about the school to which his boy went, the better for the boy.

Mr. Wilson said that the discussion thus far had been carried on by schoolmasters from their own points of view. This one-sidedness, he hoped, would be corrected before the debate closed by a contribution from the parents' standpoint. He could not persuade himself that all the strained relations which arose from time to time between schoolmaster and parent were due solely to the perversities of the latter. He even ventured to think that heads of schools were apt to take themselves too seriously and did not take heads of families seriously enough. The family, after all, was at once the oldest and soundest of modern institutions—older than the State, the Church, or the tribe, beside which the few centuries of the existence of schools and schoolmasters seemed as yesterday. This archaic institution, after a long evolution, had at length attained a form when normal in which it stood out as the nursery of all that was best and purest in modern life—parents and offspring bound together by the strongest ties of mutual affection; the offspring so helpless during the long period of infancy and immaturity that the parents were called upon each day, and all day, for the exercise of their utmost skill, good sense, and wisdom in the management of the home. The experience, knowledge, and what might be called the spiritual capital, accumulated in this long process of self-sacrifice and living for others, entitled the parent to a respectful hearing when he or she made representations about those that had long been the objects of their daily observation. Mr. Brown, he inferred from his paper, fully appreciated the relation of the school to the home. He correctly indicated the origin of the school as the product of a division of labour. He should have expected this attitude *a priori* from the head of a successful private school. The very fact that a parent made choice of such a school, where he bore the whole cost of the education, and not of one in which nearly all was borne by the State or by endowment, implied that he had good and sufficient reasons for doing so. This initial step made for harmony throughout the pupil's school life. The private-school master had every inducement so to arrange his school course as to meet the

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reasonable requirements of parents. Such flexibility of adaptation need not in any way impair the efficiency of the education. A school of three hundred pupils afforded an excellent field for the evolution of uniformities from diversities, a strictly scientific process. In the public school the wants and wishes of parents were too frequently disregarded because they did not harmonize with some arbitrary or out-of-date standard. After all, it was not the amount of any particular sort of knowledge acquired at school that was the essential matter: it was the discipline, physical, mental, and especially moral, gained there that gave the average boy an invaluable training for playing his part in a world that was no fool's paradise. He had to learn obedience to two codes—that of the schoolmaster, and that more drastic one, enforced by more dreaded sanctions, the code of honour of his schoolfellows. He must not tell lies, be a sneak, or a coward; must take his chastisements, whether inflicted by master or schoolfellow, bravely. In this way he had to find some *via media* between self-assertion and self-repression, and thus almost every hour of his school life he was learning the invaluable lesson of self-control. The home-bred boy, even under such circumstances as those of John Stuart Mill's boyhood, had much reason to regret the decision of the parent that deprived him of such training.

Mr. ORCHARD said the leading thoughts that had been brought before them were individualism, co-operation, and tact. The child was not to be considered as merely a piece of wood or stone; but they must take account, as had been pointed out, of the character and idiosyncrasies, and the health also, of the pupil. Unless they did that, they could not expect that obedience upon which stress had very rightly been laid. Nothing was more harmful to education than the lack of sympathy and co-operation between the parent, the teacher, and the head master. If they were to be successful educators they must have the parents' co-operation, and the question was how to bring that about. No doubt much could be done by weekly reports and position lists, such as had been shown them. With regard to the use of games, it was impossible to know really what was suitable for a boy without consultation with the parent.

Mr. GOODFELLOW regretted that Mr. Addis's experience, in his dual capacity of parent and head master, had led him to the conclusion that every fault committed by a pupil was to be ascribed to disobedience. The distinction between conduct and faculty had been exemplified in the table shown by another speaker. Especially was this the case with regard to such matters as handwriting, which depended very largely upon the development of the artistic faculty. He thought they were getting a little too much of standardizing by the State, which appeared to him to come from the same source as some of the socialistic ideas which were being promulgated so earnestly at the present day. It arose from the notion that everybody should have an equal opportunity, and even that nobody was to be allowed to make more than a certain amount of use of his opportunity. The opener had given an instance of that where the inspector had affirmed the view that the bright children were to be checked, and not to be allowed to get too far ahead of their less able companions.

Mr. KING said he was getting rather tired of people reflecting on the private-school master for paying too much attention to the views of the parents. He did not believe that this was the case, but, on the contrary, that they had more freedom of action than the public-school masters. They were simply responsible to the parents for the whole of the education they were giving, whereas the unfortunate head masters of public schools were always thinking of what the Board of Management or their chairman or their governors would think of them; and on the top of that came the Inspector who reported to the Board of Education. Now there were in addition a number of officials from the various County Councils who might walk in at any time and look round, not to mention the occasional reports that had to be sent up to the Local Authority. On the whole, it could hardly be said that the lot of the endowed school head master was a happy one.

The CHAIRMAN said the fundamental question had really been brought out by Mr. Addis, who had, however, he thought, used the word "machinery" in the wrong way when he spoke of a school as a first-rate machine. He thought the word "organism" was what Mr. Addis had had in mind, and, if that word were substituted, it would state the whole position. A school must be regarded as an organism which developed in a particular way according to a law of its own. Not only must the boy fit into the school, but the school must fit into him, and the parent would come in as what the German philosophers might describe as the invariable third. Of the two kinds of school, private schools and public schools, the parents had too much influence in the former and not enough in the latter. In the case of strong private schools, like that of Mr. Brown, the head master was quite strong enough to be able to resist the forces from without. He did not think that any schoolmaster would wish to oppose the influence of the parent. In a German play by Otto Ernst, who was formerly a schoolmaster, now a playwright, there was a scene in which the masters were conversing in the common room, and one of them remarked: "What do parents know about education?" What could be more unwise than for a purely professional man to talk in that way? He knew more, no doubt, about the professional work, the actual subjects to be taught, and how to deal with pupils, but did schoolmasters on the whole know more about education than parents did? From the purely technical standpoint schoolmasters might claim precedence, but it was a wrong attitude altogether to take up with regard to parents to say they did not know anything about education. The solution of educational difficulties seemed to be that the influence of the parents should be exercised very strongly on schools; but it ought to be exercised in the proper quarter. The direct influence of parents on the school was altogether wrong. It was of no use for parents to come to the school bullying the masters and saying, "You must do this," and so on; that was the wrong place. In both public and private schools there were certain matters to which schoolmasters must attend, and they could not allow a parent to insist on carrying out his own views, however right those views might be. They could not allow that and still do their duty towards the rest of the school. One thing he had observed for a very long time about parents, and, though they did not always put it in this form, what they always wanted was "a little special attention to Johnnie"—not too much, but just enough to give him an advantage. That was the very thing they must fight against. On the other hand, if a parent took an interest in education, he would use his powers with the private schools, or with governing bodies, or with the Board of Education. But schoolmasters suffered too frequently from the complaints of parents as to what was being done at school, and there was nothing to do but to put the thing right. The parent blamed the teacher for the way the thing was going instead of using his influence in the proper places. In small parishes, people like the local butcher would be found having too much to do with the actual control of a school, and saying: "If you do not submit, I will get on to the School Board or the governing body and annoy you." That sort of thing was going to be fought. If they were going to make children fit for their work in life, neither they nor the parents must decide which knowledge was worth most: that must be decided by the body politic of which they formed part. With regard to the illustration Mr. Brown gave, it was interesting that Sturm, the great humanist, in his school made it as much a fault to get beyond the work of a particular year as not to get up to the standard; and yet that man had a European reputation, and students in training colleges and Universities, and schoolmasters generally, were influenced by his methods at the present day. That showed, perhaps, how wrong professional people might go when left to themselves.

Mr. BROWN, in reply, said, with regard to the view expressed by one of the speakers as to the faults of children being all reducible to disobedience, he agreed that this was the main factor with regard to moral training and school discipline; but it must not be forgotten that the connotation of the terms "obedience" and "disobedience" was exceedingly vague, and the question must be handled with delicacy. A boy had his own views of the punishments meted out to him, and, on careful inquiry, it would be found that his ideas on the subject were really very sane ones. A boy had, moreover, a surprising faculty of seeing through the outside envelope of his master, whether head master or assistant, and finding out his special quality or peculiarity, whether in discipline, management, or teaching. This quality was probably due to the fact that a boy's whole life was his school, and that for the time being his mind was concentrated on his surroundings. It was not enough to tell him, "This must be done because I say so," not because they had been brought up to think it was right. "Obedience," therefore, must not be the only word in their moral vocabulary. For the training of character they must have everything as far as possible in due proportion, or there would soon be an end of the pupil's respect and the master's control. He quite agreed with the Chairman in his suggestion of the use of the word "organism" in place of "machinery." If the school was to be a well developed organism and the child an organism to work in the

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school, it was evident that there must be mutual accommodation. The very suggestion at once carried one away from the idea of machinery to the position he had taken up at the beginning of his paper. The parents with whom he had to deal were mostly business men accustomed to business routine, and he did not find that they expected the order of the school to be interfered with to suit their own notions of education. As the Chairman had put it, what was generally asked for was a little special attention for the individual pupil, and in his opinion the request was an entirely reasonable one. There was a tendency in the State schools, and generally he thought in all large schools whether public or private, for the teacher to get the better pupils on, and the request of a parent to give "a little special attention to Johnnie" really involved the question of the teacher devoting his best efforts to bringing on the intellectually weaker pupils and leaving those who did not require special attention to get on as they best could.

Votes of thanks to the opener and to the chairman concluded the proceedings.

EDUCATIONAL WASTAGE.

Mr. T. H. J. Underdown (Bristol), in his Presidential Address to the National Federation of Assistant Teachers at their annual Conference held at Northampton, dealt mainly with the need for raising the school age and for educational care during the period of adolescence. The neglect of the State to provide guidance and care for those between twelve—the present statutory minimum leaving age—and eighteen years of age (he said), results in the waste of a large part of the early training in the primary school, "in injury to character, in the lessening of industrial efficiency, and in the lowering of ideals of personal and civic duty."

Leaving Age—Half-Time—Street Trading.

Unfortunately no statistics are compiled by the Board of Education to show the number of children who leave school at the ages of twelve, thirteen, and fourteen respectively; but the Consultative Committee of the Board, in their report on "Attendance, Compulsory or Otherwise, at Continuation Schools," have estimated that at the present time 211,000 children between the ages of twelve and fourteen, out of a possible 1,216,000, have ceased to attend the primary school. Of those 211,000, some are to be found amongst the 90,000 taking the four years' course in those secondary schools which receive grants from the Board of Education. Another leakage in the primary-school system is that of half-time permitted under local attendance by-laws. Under the Robson Act of 1899, the rural child at the tender age of eleven may become a half-time agricultural labourer until thirteen, when the State ceases to care for him any further. The urban child may receive half-time exemption and enter the factory. The total number of half-timers recorded in 1900–1 was 74,468, the low-water mark of recent years. In 1907–8 the number had increased to 84,498. But we are nearing the end. The Inter-Departmental Committee recommend the abolition of all partial exemption. Mr. Runciman is anxious to give effect to this recommendation next session, and such a Bill would have the active support of educationists throughout the country. Another pernicious form of juvenile labour is street trading, which undermines and militates against the humanizing influences of the primary school. The Chief Constable of Manchester, in May, 1906, gave his opinion in these terms:—"Street trading, of all juvenile wage-earning occupations, is productive of a larger amount of evil than any other occupation followed by children. The boys develop into lazy, shiftless, and workless men, becoming for the most part racecourse touts, often travelling thieves and loungers. They dislike more and more honest work. They become mere creatures of chance, and sink down until they end their days either in gaol or in the workhouse." While a few of the Local Authorities use their powers under the Employment of Children Act, 1903, in the great majority of our large centres of population the street arab roams unchecked. With a full knowledge of these sources of waste in our present system, we emphatically claim for the child: (1) the abolition of half-time employment, (2) the prohibition of street trading under sixteen, and (3) the raising of the statutory minimum leaving age from twelve to fourteen, accompanied by powers under local by-laws to enforce attendance until fifteen or sixteen. These urgent reforms must take first place in any advance the Legislature makes in education; for it is of little use to attempt to extend the superstructure of further education provided by secondary, technical, and continuation schools until the foundations in the primary schools are truly and firmly laid.

The Period of Adolescence.

The extension of the school age, I have urged, would still leave unchecked the great educational wastage now going on amongst those who cease to attend school at fourteen. It is estimated there are about two million children in England and Wales between fourteen and seventeen years of age, of whom 75 per cent. are receiving no educational care from the State. These years are the most critical in the life of the future citizen. Stability of character cannot be fully established at fourteen years of age. A medical expert recently wrote in the columns of the *Practitioner*:

> It is during early education by the teacher that the foundation of character is laid. Probably, if a period is fixed, it is during the first seven years of life; the character being formed during the next seven and consolidated during the third seven—viz., between the ages of fourteen and twenty-one—and what is laid becomes too fixed and firm to be capable of reform after the age of twenty-one years. Children bear the scars of moral injury all their lives, and I have lived too long to believe in the complete reformation of character after full maturity, although I do not doubt the authenticity of exceptions.

This is strikingly in accord with the fact that 80 per cent. of our prisoners are first convicted of crime between sixteen and twenty-one.

Decay of the Apprenticeship System.

What are the conditions of labour under which these critical years are usually spent? Figures are unavailable, but there is reason to believe that year by year fewer enter a skilled trade on leaving school. Under the former conditions of industry, a boy left school to enter upon his term of apprenticeship, and thus continued his education or his general training. The decay of the apprenticeship system has been brought about by the changes in our industrial methods, by the subdivision of labour, by the use of machinery, and by the development of the factory system at the expense of the smaller workshop. This change has brought its disadvantages. The former tuition, general as it may often have been, has given place to the more modern, but slipshod, process of having "to pick it up." It is now more difficult to obtain a general knowledge, and skill can be obtained in only one branch of the trade. Thus the workman is evolved highly skilful in one limited direction and correspondingly narrow in a true appreciation of his trade. There is, too, a loss of discipline, for the former worthy master's kindly personal interest in his apprentice has given place to the complacency of the limited liability company. In our peculiar English way, where the State acts as parent—namely, in the Poor Law and industrial schools—the boys receive a trade training. Thus the State gives to the convicted boy at the industrial school what is unavailable for the great mass of law-abiding subjects. For once in a way it pays to be bad.

Blind-Alley Occupations.

The changes in our industrial system have also increased the opportunities for non-educative employment. Mr. Sidney Webb has stated that to-day in London some 40 per cent. of the boys leaving day school become van or errand boys. How rapid has been the increase in the number engaged in these occupations is thus shown:

Messengers, Porters, and Watchmen under Fifteen Years of Age.

Census.	Boys.	Girls.
1881	45,144	888
1891	78,169	2,246
1901	128,787	4,764

The report of the Inter-Departmental Committee on Half-Time makes this comment on the Bradford Mills:

> The majority of boys do not get permanent employment in the trade at all. Doffing or piecing is no apprenticeship to them, because they do not continue in the trade. Between fifteen and eighteen years of age the greater part of the boys leave the trade, having lost an important part of their schooling, having acquired some preliminary knowledge of a trade which cannot find them employment, and are cast upon the labour market to try to find employment in a district which is peculiarly deficient in well paid male occupations. As far as the boys are concerned, the system seems calculated to create casual and unskilled male labour.

Thus the ranks of the van boys, the messengers, the porters, and of a large proportion of factory workers are easily entered, but too often end in a "blind alley." The wages are at first proportionally high, but in a few years this worker finds himself ill paid, untrained, and under-employed or unemployable.

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Our Continuation Schools.

In the midst of these difficulties, it is remarkable that our voluntary system of continuation schools has met with even the moderate success it has attained—a success achieved by the enlightened policy of many Education Authorities, by the grit and perseverance of the better placed adolescents, by the direct encouragement of many employers, and by the constant efforts of teachers and others interested in the social problem. From the statistics of the Board of Education, I make this comparison of the students attending evening schools:

Age.	1903–4.	1906–7.	Increase.	Inc. per cent.
15 to 21	359,503	362,627	3,124	0·8
Over 21	181,756	240,987	59,231	32·5

The outstanding weakness of the present system, therefore, is the lack of growth in the numbers (0·8 per cent.) between the ages of fifteen and twenty-one, a striking contrast when set against the great increase (32·5 per cent.) of the adults. These figures indicate very plainly that the voluntary system breaks down just where it is most needed and that we are drifting to an untenable and illogical situation: we educate our children at the public expense until they are thirteen or fourteen; we then allow them to be exploited by employers and parents for private, pecuniary gain; and, finally, we ask the State to undertake the burden of re-educating them in their manhood or womanhood.

Many firms recognize to-day that the adolescent is too heavily loaded with the shackles of industry, and they grant facilities for attending day or evening continuation schools, accompanied by a reduction of the hours of labour. But these employers are in a small minority, and the remainder are either apathetic or even hostile to the movement; and their apathy and hostility too often are endorsed by the workers themselves.

What are our competitors abroad doing in the matter? France and the United States adhere to the voluntary system, but in the latter case the leaving age is higher than in this country. Compulsory attendance is enforced in twenty-two out of twenty-six States in the German Empire. In Switzerland an area containing 88 per cent. of the population is under compulsion in this matter. Always in the vanguard educationally, Scotland secured powers under her Education Act of 1908 to enforce compulsory attendance at the local option of the School Boards.

In my opinion—and here I speak for myself alone—our voluntary system, as rapidly and as smoothly as possible, must give place to a scheme of compulsory attendance at continuation schools, for those under eighteen years of age. This is no new principle. We stand in this matter to-day where we stood forty years ago, when the State, realizing the ineffectiveness of voluntary attendance at the primary day school, adopted compulsory attendance under the Act of 1870.

Continuation Schools of the Future.

In the nature and scope of this training we are not likely to repeat our former mistakes in catering mostly for the embryo clerk to the neglect of the manual worker. The courses of study need to show greater versatility. The humanities, literature, art, physical and technical training must each have a fair field. The study of a trade, in practice and theory, if placed on a fair level with the professions, would do much to restore manual labour to the former status it occupied in the middle ages and to check that juvenile snobbery of to-day which drives droves of our young people into those so-called genteel, but poorly paid occupations. But, while the avocational side secures due prominence, the way must be open to a higher education, leading to a fuller appreciation of all that is best in art, science, and literature. Not only must the adolescent be put in a fair way of earning his living, but he must be taught how to live. This work can well be entrusted to the teachers of the highest skill and the ripest experience, and will form the coping stone of our educational fabric.

COLLEGE OF PRECEPTORS.

PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of the successful candidates at the Examination held in October, 1909:—

Class I.

Merrick, F. G.

Class II.

McAlister, A. | Wall, C. E.

REVIEWS.

The Science of Language.

Introduction to the Natural History of Language. By T. G. Tucker, Litt.D., Professor of Classical Philology in the University of Melbourne. (10s. 6d. net. Blackie.)

The development of language and the comparative forms of different languages are full of interest to many people that have little or no real technical knowledge. Similarities are curiosities, and subordinate differences give additional piquancy to the recognition of resemblance. But it is easy to be misled; and therefore one is prepared to welcome a capable account of the general course of linguistic development and of the facts of the distribution and history of language. The expository facility of Max Müller and the steady sense and accuracy of Whitney have rendered readers exacting; but the conceptions of pioneers naturally require occasional correction, and the scope of treatment has an irresistible tendency to expansion. Prof. Tucker has no claim to rival the charm of Max Müller's presentation or to supersede Whitney in his own field; but he is armed with abundant knowledge, and with a plain and perspicuous capacity of exposition. He does not profess to do more than outline the subject; his work, "so far as it is a student's book, is meant for nothing more than a first general survey." For this purpose it will serve admirably. Though the materials are in a considerable measure naturally the facts that have already done duty in similar works, Prof. Tucker shows everywhere complete independence of judgment, offering conclusions and speculations of his own "with all due diffidence."

After a preliminary chapter on the nature and scope of the subject, Prof. Tucker deals in considerable detail with Phonology, and with Speech and Writing. Incidentally we may remark that, while he accepts De Rougé's demonstration of the traditional derivation of the Phoenician alphabet from Egypt as "beyond all reasonable doubt," Dr. Giles had already (in the latest edition of the *Encyclopaedia Britannica*) abandoned it, under compulsion of Prof. Flinders Petrie's discoveries in the Egyptian royal tombs at Abydos (Egyptian Exploration Fund volumes, 1900 and 1901). No doubt these discoveries had not reached Melbourne in time for Prof. Tucker, and from 1874 De Rougé's explanation had been generally received; but the point shows how necessary it is to hold judgment in suspense on matters that cannot be definitively demonstrated. The classification of language—morphological and genealogical—is treated with marked ability, and with vigilant avoidance of pitfalls: the chapters form an excellent example of method of investigation. Three extensive chapters are occupied with a general survey of languages, with lucid dispositions into families, branches, groups, &c., and with a more or less detailed statement of the localities of their use. This leads naturally to a warning against the too common error of accepting kinship of language as a criterion of kinship of race; and the treatment of race and language is conducted with special reference to the Indo-European tongues. Prof. Tucker has something to say, at different points, about Celtic and the Celtae, and about certain confusions in connexion with the language and the race; and he comes nearer than most writers to the repudiation of Celtic as an ethnological term applicable within the British Isles. "There is perhaps," he says, "among philologists (so far as they speak in terms of ethnology) a growing tendency to narrow the use of the word 'Celt' to the stock (tall and rufous) which is primarily responsible for the diffusion of the Celtic languages. Though this involves the transference of the ethnical name from the central people to which it originally belonged to a people which originally had no claim to it, no harm would result if the name were used consistently, and if another title were no less consistently applied to the 'Auvergnat' or 'Savoyard' race." But this is too facile: there is no reason why people should be puzzled by a difference of nomenclature, or why the philologists and the ethnologists should not keep in accord in dealing with the same facts. With regard to the original seat and the diffusion of the Indo-European family of languages Prof. Tucker does well to follow Schrader; the exposition is cautious and lucid. Phonetic changes and changes of meaning are very ably discussed in succeeding chapters; and the final chapter, on the development of language, illustrates many processes under different specific heads. The volume is a very comprehensive treatise, amply sufficient for its elementary and general purposes, competent in point of knowledge, concise and lucid in presentation, and plain

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in style. It ought to be welcome to the general reader with literary interests as well as to professed students.

Pure Mathematics.

A Course of Pure Mathematics. By G. H. Hardy, M.A. (12s. Cambridge University Press.)

The vast field implied by the term "pure mathematics" lends to the title of the above-named work a vagueness which invites much speculation as to the material likely to be selected for his purpose by a writer confining his attention to the production of a single volume of moderate size. The preface to the present treatise clearly indicates the author's aim, and, when that is understood, the contents of the treatise are readily seen to be the natural and fitting subjects of his choice. The preface itself impresses the reader as a more than ordinarily emphatic expression of personal opinion. It may, however, be borne in mind that the writer has given very special attention to the department of mathematics which he considers. The volume is thoroughly original in scope, and seeks to supplement, and not in any sense to supplant, existing text-books. It takes up portions of theory which are to be found in the standard treatises on special branches of mathematics; but the writer, as a result of the plan of his work, has been in a position to give greater space to individual points than is in general available in a student's manual on a definite subject. Prolonged experience as a teacher of first-year college students has led the author to believe the course he advocates to be essential to a thorough assimilation of ideas. It has been asserted that Euclid wrote practically the whole of his First Book of the "Elements" in order to prove the celebrated forty-seventh Proposition. In the present text-book the author's primary wish was to give an exposition of the theory of the logarithm and of logarithmic and exponential series which should be based on the definition of the logarithm as a definite integral. That particular theory is the subject of the last two chapters only of the present work, and the contents of the preceding sections are selected from materials required for—or, at any rate, conducive to—the full understanding of the theme to which the treatise really owes its existence.

A very interesting discussion of *real numbers* and of the possibility of representing them all, whether integral, fractional, or irrational, by means of a linear continuum, forms the subject-matter of the opening chapter of the work, and is followed by a consideration of various leading functions of real variables. A suggestive treatment of the first principles of complex numbers follows next, forming the text of the third chapter of the work. Chapters IV and V are perhaps specially characteristic of the author in the capacity of teacher. They treat with exceptional fullness the ideas underlying limits. The root meaning of a limit is discussed first in one form and then in another, and always in a suggestive manner. A wealth of illustration is afforded, in order that the student may realize the full significance of one of the most important and far reaching of mathematical conceptions. Portions of the differential and the integral calculus then claim the attention, and a distinct chapter deals with the principles of convergence in their bearing on infinite series and infinite integrals. Chapters IX and X are those which inspired the author, and are devoted to a scholarly discussion of logarithmic and exponential theory, first on the basis to which reference has been made above and afterwards by an alternative method. It is, of course, evident that the former treatment is unsuitable for students who are not already acquainted with the differential and integral calculus.

The value of the present work to the student of mathematics is beyond question. Such a study of it as will ensure familiarity with the principles of which the author treats, implies an acquisition of knowledge whose utility it would be difficult to estimate too highly. It is well to call attention to the existence of occasional misprints which may be corrected in any future editions of the volume.

GENERAL NOTICES.

CLASSICS.

The Electra of Sophocles. With a Commentary abridged from the larger edition of Sir Richard C. Jebb, Litt.D., by Gilbert A. Davies, M.A. (4s. Cambridge University Press.)

Prof. Davies has followed the plan pursued in the adaptation of the previous volumes of Jebb's great edition to the use of schools. Again we must express a doubt whether the critical foot-notes and the textual discussions in the notes are not superfluous: they are not very extensive, however, and they may strike the fancy of more inquiring students. The edition furnishes a most ample apparatus for grasping both the language and the meaning of the play. The whole get-up is admirable.

Q. Horati Flacci Saturarum Liber II. Edited by James Gow, Litt.D., formerly Fellow of Trinity College, Cambridge, Head Master of Westminster. (2s. Cambridge University Press.—"Pitt Press Series.")

To those that are familiar with Dr. Gow's previous editions of separate parts of Horace the present volume will not stand in any need of commendation. The biographical and literary introduction is a most careful and judicious summary of the necessary preliminary information, and the notes are exceptionally fresh, pointed, and suggestive. The saving grace of common sense is continually manifest. An admirable edition for school purposes.

Latin of the Empire; for use in Schools and Colleges. By W. King Gillies, M.A., B.A. Oxon., and A. R. Cumming, M.A., Classical Masters in the High School of Glasgow. (4s. 6d. Bell.)

The purpose of this volume of extracts, beginning with Seneca and ending with St. Augustine, is to disabuse ingenuous minds of the notion "that with the death of Augustus the Latin language suddenly became disreputable," and "to illustrate, in outline and in a handy form, the more important phases of Latin in its later development towards the Romance languages." Prof. Phillimore furnishes a bright and forcible introduction, showing why such a book is "peculiarly seasonable in the present circumstances." For ourselves, we have long anticipated his reasons, and we commend them to our readers. "How much of a teacher's duty, no matter in what rank of the profession he be placed, is neither to feed, nor to drill, nor to correct the pupil's mind, but to open windows for intellect and imagination!" And we agree that the editors of the present work "do open windows." At the same time, there may be a superfluity of windows, and the examination is lying in wait to test the Latin of the outlookers (or inlookers). The book must therefore be used with discretion until the examinations are oriented so as to dissipate the dangers of "disreputable" Latin. The selection has been made with experienced and careful discretion.

Stories from the Greek Legends. By C. Gasquoine Hartley (Mrs C. G. Gallichan). (3s. 6d. net. Werner Laurie.)

After a general introduction passing in review the greater gods and goddesses of Olympos (with some reference also to the less powerful divinities of the world of men), Mrs. Gallichan retells a score of the old stories of Gods and Heroes in very simple language suitable for quite young readers. These old stories are ever young, and, often as they have been told and retold, they still keep their freshness in Mrs. Gallichan's pages. She is considerably gifted with the story-teller's art There are eight full-page illustrations.

MATHEMATICS.

A New Algebra. Vol. I. By S. Barnard, M.A., and J. M. Child, B.A., B.Sc. (2s. 6d. Macmillan.)

An outcome of modern ideas, and written with a view to uniting with a useful school text-book a more logically ordered exposition of elementary algebra than has hitherto been generally found in works of similar scope. The authors, who are both experienced in the art of teaching, have spared neither time nor thought in the endeavour to arrive at a satisfactory scheme of study. It remains to test the success of any innovations they have made as to sequence. The earlier volume of the complete text-book—namely, the volume under notice—discusses in the first of its three subdivisions, and merely as generalizations of arithmetic, the fundamental laws of algebra, together with a number of rules. Letters throughout the entire section denote positive integers only and have mutual relations of value that admit of arithmetical interpretation. At the same time, suggestions of future broadening are made when opportunity offers. Part II serves as an introduction to zero and negative integral numbers. Ideas previously formed receive enlargement; processes already explained acquire new meanings supplementing the old and adapted to the wider number view considered. Part III of the volume embraces a still more extended number category, including fractions, and renders complete the introduction to the field of *rational* number. Again, previous knowledge is supplemented so as to carry the pupil to higher levels.

Concurrent Practical and Theoretical Geometry. Parts I and II. By W. J. Potter, M.A. (3s. net. Ralph, Holland, & Co.)

Part I has been issued for some time and was noticed very favourably in these columns. The present volume contains it in combination with Part II, and we learn that a third Part has also been prepared and that the work is now published complete. The same plan of instruction as that adopted in Part I is continued in the later pages of the text-book now considered. Hence the advantages of the course already noted with reference to its commencement mark its later stages also. Teachers must again be cautioned against allowing the practice of drawing up carefully tabulated work to be carried to excess. Neatness of arrangement is of great value, but the constant ruling of tables may easily lead to waste of time and energy.

An Introduction to Projective Geometry. By L. N. G. Filon, M.A., D.Sc. (7s. 6d. Edward Arnold.)

There appears to be ample room for a work of the kind, and

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Dr. Filon's text-book is more than likely to establish itself as a standard treatise. The author discusses his subject with power, and writes very lucidly. His purpose is to present a concise and clear view of the theory of conic sections by means of a development depending as far as possible on projective methods of proof. All that is required by the student, unless he aspires to academic honours in mathematics, is contained in the first half of the volume, and may be read by any one already possessed of a knowledge of Euclid and having some slight acquaintance with the elements of analytical geometry and trigonometry. In the interest of beginners, and possibly at the expense of some elegance of proof, the author prefers to base his arguments on the general principles of cross-ratios rather than on harmonic groups. Hence we find the theory of anharmonic ratio considered at a very early stage. Referring to the plan of his book, Dr. Filon in the preface gives expression to a view with which we heartily concur—namely, that it is undesirable to create the impression that the essential focal properties of conics depend for their establishment on the theory of imaginaries. This theory makes its first appearance, together with the subjects of homography and involution, in the second half of the work. Here the pages are written for advanced students and for University "Honours" candidates. A measure of completeness is given to the whole discussion by the introduction of chapters on the cone, the sphere, and quadrics in general.

SCIENCE.

Elementary Chemistry. By Hollis Godfrey, Head of the Department of Science, Girls' High School of Practical Arts, Boston, Mass. (4s. 6d. net. Longmans.)

The author has written up to four ideals: "to obtain simplicity; to reach the understanding of the student; to rouse the pupil to a realization that the science of daily life is identical with the science of the schoolroom; to include all the essential facts and theories which could be rightly assimilated in one year's work in elementary chemistry." The results are very successful. The most wide-reaching general truths are kept in the foreground and effectively impressed; illustrations and examples are chosen from things likely to be familiar to the student; practical applications are constantly held in view; and the exposition is plain and perspicuous. Generally, the work "treats of those portions of elementary inorganic and organic chemistry which the author has considered of most value to the student." Chemical arithmetic is treated in a separate chapter once for all. Epitomes of the several chapters and questions on each chapter are appended. There are numerous illustrations.

The Periodic Law. By A. E. Garrett, B.Sc. (by research) Lond., F.R.A.S., &c. (5s. Kegan Paul, Trench, Trübner, & Co. International Scientific Series, Vol. XCV).

The first half of the volume consists of a concise historical account of the efforts made to establish a scientific classification of the elements, concluding with the work of Carnelley, "who did so much to establish on a firm basis the periodic law as given to the world of science by Mendeléef." It is very satisfactory to note that Mr. Garrett has been careful to set forth the views of the proposers of the various schemes, even though later investigation may have shown that such views were incorrect: they are always instructive, and secondhand information on them is always to be distrusted. The modern applications of the Periodic Law are adequately explained, the final chapter working to a climax of interest in the fascinating problem of the ultimate structure of the atom. The progress of recent discovery and speculation is well represented in all points of importance and utility. The volume is a welcome and able addition to a famous series.

The University Tutorial Press issues *First Stage Inorganic Chemistry (Practical)* for the First Stage Examination of the Board of Education (South Kensington)—in a revised edition by H. W. Bausor, M.A., late Scholar of Clare College, Cambridge. The altered character of the examination has led to large omissions and additions, as well as to much rewriting. The little book is now up to date and most serviceable for its purpose.

MODERN LANGUAGES.

Lectures on Dante. By the late N. Perini, F.R.A.S., Professor of Italian in King's College, London. (3s. 6d. Hachette.)

With the exception of the introduction, which is historical, biographical, and literary, the volume is a collection of notes for lectures rather than "lectures." The sketch of the times and the circumstances of Dante will be very useful to beginners, placing them in position to understand the works and to appreciate the genius of Dante. For the rest, it is simply a brief analysis of the contents of the several cantos of the "Divina Commedia," with incidental indications on the more important points, helpful so far as they go. Prof. Ricci's "Foreword" consists mainly of censure of "the most extraordinary mistakes" and the "meaningless obscurity" of the translations of Dante, and of ridicule of the accumulation of errors by industrious commentators imperfectly acquainted with Italian. Prof. Perini, he says, "has been satisfied with reading to his pupils the Italian text, accompanied by some simple explanations—the only way of studying Dante's immortal Poem, of understanding its meaning, and of enjoying its sublime beauties." We doubt whether this is the only way: we cannot but think that more assistance is both desirable and feasible. However, Prof. Perini's notes will be very useful by way of introduction.

French Lessons on the Direct Method. By Marc Ceppi, Senior French Master, King's College School. (1) Beginners' Course (1s. 6d.). (2) Junior Course (1s. 6d.). (3) Intermediate Course (2s.). (Hachette.)

The author has regard both to written and to spoken French, and endeavours to utilize the best materials and methods. The Beginners' book opens with phonetic lessons, and the phonetic script is carried on in diminishing use in later lessons. The verbs are instilled by an attractive drill; and the vocabulary and phrases used are based upon Hölzel's pictures. The Juniors' book is slowly progressive, with numerous well devised exercises. The Intermediate course rises to the requirements of such examinations as the Oxford and Cambridge Junior Local, and those for the College of Preceptors' Second Class and Naval Cadetships. The three books will ensure a good working vocabulary and not a little facility in putting it to practical use. Much labour has evidently been expended in the selection and the presentation of the materials. The volumes are attractively got up.

We welcome cordially another issue of Cassell's *New German and English Dictionary*, revised and considerably enlarged by Karl Breul, M.A., Litt.D. Cantab., Ph.D. Berl., Reader in Germanic in the University of Cambridge (3s. 6d.). It is now one of the very best and handiest of German dictionaries.

RELIGIOUS AND MORAL.

The Gospels in the Light of Modern Research. By the Rev. J. R. Cohu, Rector of Aston Clinton, Bucks, sometime Fellow of Jesus College, Oxford. (6s. net. Oxford: Parker. London: Simpkin, Marshall, & Co.)

Mr. Cohu aims at "placing before the reader, in an intelligible form, the present attitude of the Higher Criticism towards the vexed problems of the origin, composition, and historical trustworthiness of the four Gospels." First he puts forward a plea for a reasonable criticism of the Bible in the interests of true religion; next he handles sundry preliminary questions that require investigation; then he enters upon a detailed inquiry into the origin, composition, and historical value of the Gospels; and, finally, he sketches a supplementary picture of the social, religious, and political condition of things in Palestine in our Lord's time. Some special discussions are added in an appendix, including a singularly unsatisfactory argument in support of the Gospel miracles. The tone of the work is liberal, with a very proper dash of conservatism; while the value of the Higher Criticism is frankly recognized, Mr. Cohu is steadily alert against theories and assumptions that are not proved to his satisfaction. The work has obviously involved prolonged and arduous labour; it is written with adequate knowledge, with fairness (except, perhaps, to certain members of the Tübingen School), and generally with judgment; and it will be very helpful as a critical companion to the study of the Gospels.

Old Testament History. By the Rev. J. M. Hardwick, M.A., late Scholar of St. John's College, Cambridge, and Bell University Scholar, and the Rev. H. Costley-White, M.A., late Scholar of Balliol College, Oxford, Assistant Masters at Rugby School. Periods I, II, and V. (2s. each. Murray.)

The series will be in five volumes, of which we have three before us: (1) Period I, from the Creation to the Crossing of the Red Sea; (2) Period II, from the Crossing of the Red Sea to Ruth: and (3), Period V, from Hezekiah to the end of the Canon. Each volume provides material for one term's work. The narrative for the most part is given in the words of the Authorized Version; brief historical explanations and general commentary are supplied; the chronological order of events is followed; each period is illustrated by reference to contemporary literature and monuments; and difficulties of thought or language are explained in foot-notes. The aim is to combine the advantages of a general history with those of the ordinary commentary. The volumes will be very helpful towards a systematic and intelligent study of the texts.

The Divine Minstrels. By Auguste Bailly. Translated by Ernest Barnes. (5s. net. The Medici Society, through Philip Lee Warner, 38 Albemarle Street, W.)

This is "a narrative of the life of Saint Francis of Assisi with his companions." It is not systematic or complete as a biography: it is, rather, a series of scenes with a strong devotional colouring, depicted "in the form of a romance," and illustrating "the little less than miraculous revolution worked by the man of Assisi in the life and intellectual outlook of medieval Italy." Geraard David's picture of "St. Francis" is reproduced as frontispiece.

PSYCHOLOGY AND ETHICS.

An Introduction to Social Psychology. By William McDougall, M.A. Oxon., M.B. Cantab., M.Sc. Manc., late Fellow of St. John's College, Cambridge, Wilde Reader in Mental Philosophy in the University of Oxford. (5s. net. Methuen.)

In this fresh and vigorous volume Dr. McDougall contributes his "mite"—and a very considerable mite it is—"towards the building up of a psychology that will at last furnish the much needed basis of the social sciences and of the comprehensive science of sociology." "The basis required by all of them is a comparative and physiological psychology relying largely on objective methods, the observation of the be-

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haviour of men and of animals of all varieties under all possible conditions of health and disease; it must take the largest possible view of its scope and functions, and must be an evolutionary natural history of mind; above all, it must aim at providing a full and accurate account of those most fundamental elements of our constitution, the innate tendencies to thought and action that constitute the native basis of the mind." The introspective description of the stream of consciousness—"pure psychology"—is but "a preliminary part" of the business. Dr. McDougall's conception, then, is generous, though not too generous in view of the final purpose; and he works it out in comprehensive detail with acute argument (in many points original), ample illustration, and fluent expression. If he handles some eminent names with unceremonious directness, that is a fault of manner; however, it adds a spice of piquancy and does no real harm: the thing is to know precisely where we are in the argument, and frank independence is more useful than tame acquiescence in the opinions of any authority. The work is extremely able and opportune, and will be very welcome to all students of the social sciences. We are glad to note that Dr. McDougall will shortly follow up this volume with another, building on the foundations here laid.

An Introduction to Psychology, for the use of Teachers. By J. H. Wimms, M.A., B.Sc., Lecturer on the Theory and Practice of Education, Goldsmiths' College, University of London. (1s. 6d. net. Charles & Dible.)

This little book will be extremely useful to teachers that have felt "a very real need for a small handbook dealing with the subject from the point of view of the classroom, and which was at once sound and consistent in its terminology and simple and definite in its language." Mr. Wimms wisely leaves aside the more profound and metaphysical aspects of psychology, and works out the more elementary principles, which are not likely to frighten off a beginner. Both in selection of material and in form of treatment he has kept his eye upon the solution of the problems of the school. An excellent introductory manual.

A Primer of Ethics. By E. E. Constance Jones, Mistress of Girton College, Cambridge. (1s. Murray.)

This little volume is, of course, elementary and brief. It "is substantially a compilation from those recognized authorities on the subject whose views it reports"—that is to say, mainly Aristotle and Sidgwick. An ethical vocabulary, drawn largely from Sidgwick, ekes out the meagre exposition; and a considerable collection of questions and some examination papers are appended. The philosophical horizon of Cambridge seems strangely limited; but the questions may send inquiring minds further afield.

EDUCATION.

Modern Education: its Defects and their Remedies. By J. Macmillan Brown, M.A., LL.D. (Christchurch, N.Z.: Lyttleton Times Company, Ltd., Printers.)

Dr. Macmillan Brown regards education as "the question of questions in modern life," and in the present brochure he seeks "to lay the finger on the new elements that have rendered the problem so dominant and so difficult." In seven chapters he discusses (1) the aims of modern education, (2) the home in the educational process, (3) religion, morality, and education, (4) cram and examinations, (5) the early stages of education, (6) the portal of manhood and womanhood, and (7) the final preparation of a nation's talent for the struggle of life. "It is in the making of our men and women," he truly says, "that we must seek for the source of the ever-present social failures that stir our pity." But it is not easy to agree with him when he says: "We have laid far too great stress on heredity; with our later evolutionists we should come to see that environment, and especially early environment, has far more to do with the career of not only the species, but the individual." That, we think, is a superficial view, and not even accurately stated: there are deeper students of these things than Herbert Spencer. But, in any case, it seems clear that we are bound to make the best of the material that happens to present itself in the school, and that is all that is necessary for the argument. We are pleased to note that he lays great stress on the education and the influence of women and of the home. "We have got to train our girls as moulders of mind and morality and character, or well as wielders of the broom, the needle, and the smoothing iron, as caterers for the stomach, if the education of the school is to have full effect on the future of our country." He points out defects of the examination system, and would have it reformed so as to become "a test of the whole humanity of the candidates"—a sufficiently startling demand, not easily to be satisfied. However, "examination is the only true method of teaching, for its aim and end is the development of faculty, skill, talent." Let us hope so. The chapters are full of experience and of thoughtful suggestion.

Principles of Educational Woodwork. A Handbook for Teachers and others interested in Education. By Charles L. Binns, formerly Editor of *Manual Training*, Instructor in the City and Guilds' Teachers' Classes 1892-3, &c., and Rufus E. Marsden, A.R.S.I., Head of the Architectural and Building Department, Goldsmiths' College. (5s. net. Dent.)

The authors deal with "the teaching and psychological aspects of Educational Woodwork rather than with the practical details of tool manipulation," holding that, whatever the importance of self-activity and the acquirements of skill, "the cultivation of the intelligence, of active and resourceful brains, forms the chief claim of handwork to a place in school-work." After considering the aim and scope of manual training in education, they turn their attention to the more marked characteristics of childhood and to the broader differences of children (motor and sensory); to motor training for the acquirement of dexterity; to the play of interest and attention; to the true character and basis of discipline; to the equipment of the teacher; and to the art of giving observation lessons, with more special regard to the art of questioning. Most of these matters are of general application. The remaining chapters—on trees and timber, tools and materials, drawing and bench-work—involve much description, but teaching method is by no means lost to sight. The selection of points is judicious, and the exposition is always simple and plain. There are about a hundred figures. The volume is soundly conceived and efficiently executed, and it ought to be in the hands of all teachers of woodwork.

MUSIC.

"Novello's Music Primers and Educational Series" (edited by Sir John Stainer and Sir C. Hubert H. Parry).—*A Manual of Harmony for Schools.* By Francis Edward Gladstone, Mus.Doc. Cantab. 2s. 6d. Key, 1s. 6d.

The main purposes of the volume are "(1) to set down clearly and methodically (so far as may be possible) the rules of Harmony, (2) to give the names, descriptions, and treatments of the various Chords in general use, and (3) to emphasize some details of Part-writing which are commonly passed over too lightly even by the best writers." The author brings long experience to the work. He develops the subject in patient graduation, with numerous exercises, and notes to the exercises; and he presents all the essential matters very lucidly and effectively.

"Novello's Elementary Music Manuals" (edited by W. G. McNaught).—*Lessons in Harmonizing Melodies in Four Vocal Parts.* By Cuthbert Harris, Mus.Doc. Dunelm., F.R.C.O. Book II (Stages III and IV.). (1s. 6d.)

The importance of modulation in the harmonization of most melodies leads Dr. Harris to handle it at some length. The difficulty of the study is reduced materially by elimination of the ornamental elements, the florid passages being brought down to their skeleton form. The treatment is methodical and clear, and well calculated to "give the student an insight into the foundation principles applicable to the harmonization of simple vocal melodies and also instrumental melodies of the most advanced type." Discriminating exercises are appended to each chapter, and *Additional Exercises* (by the Author) may be obtained separately (6d.).

Well-known Piano Solos, and How to play them with Understanding, Expression, and Effect. By Charles W. Wilkinson. First Series. (1s. Reeves.)

Mr. Wilkinson takes up twenty-six pieces of the most varied character by a score of eminent composers, and shows how they ought to be played. His touch is sure, and his manner is engaging; and he throws in by the way interesting, and generally suggestive, remarks about the composer, the particular piece, or the class of pieces. These notes will be found most valuable to the private student.

The Organ Fifty Years Hence. By Francis Burgess, F.S.A. Scot. (1s. net. Reeves.)

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PRACTICAL MANUALS.

Laboratory Arts: a Teacher's Handbook. By George H. Woollatt, Ph.D., F.I.C., Principal of the Municipal Technical School, Portadown, Professor of "Laboratory Arts" Summer Courses for Science Teachers, Ireland. (3s. 6d. net. Longmans.)

The volume deals with materials and tools used in the construction, adjustment, and repair of scientific instruments, and is "intended for the teacher who is more or less in charge of the apparatus he uses." Three separate sections are devoted to woodwork, metalwork, and glass-work; and a final section treats of a varied miscellany of matters, while a great many useful things are packed away in appendixes. There are 119 useful diagrams. While giving full credit to other methods and processes, the author goes his own independent way on the basis of his "experience during some twenty years of practical laboratory teaching in almost all grades of educational endeavour." This is just what he ought to have done. The work is markedly able and suggestive, and it is sure to be fully appreciated by teachers and by private practitioners of the various arts under consideration.

Messrs. Dawbarn & Ward issue the fifth edition of *The Photographic Annual*, "incorporating the Figures, Facts, and Formulæ of Photography," edited by H. Snowden Ward, F.R.P.S., President of the Photographic Convention of the United Kingdom (1s. net). This year the volume is largely extended, and it contains an immense mass of serviceable information carefully digested.

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CHRISTMAS BOOKS.—I.

Romance of History.

The Red Book of Heroes, by Mrs. Lang, edited by Andrew Lang (6s., Longmans), is a varied record of noble lives, rich in example and strenuous in encouragement. "Honour and courage were the masters of the men and women whose stories are told in this book. . . . They are all, these men and women, good to live with, good to know, good to go with." The stories are admirably told, and they cannot be too widely read. The volume is beautifully got up. Eight coloured plates, seventeen full-page plates, and twenty-four illustrations in the text.

Heroes of Modern India, by Edward Gilliat, M.A., sometime Master at Harrow School (5s., Seeley), consists of "stirring records of the bravery, tact, and resourcefulness of the Founders of the Indian Empire." An introductory chapter sketches the country and its peoples; and the remaining twenty-four chapters cluster the main events of India under British conquest and occupation around the names of the more distinguished officers, military and civil. The volume is well written, and the author has evidently taken pains to be accurate, avoiding many common mistakes of fact. The book is of engrossing interest, and ought to be widely read by young folk. Sixteen illustrations.

Leo of Mediolanum, by Gertrude Hollis (2s. 6d., S.P.C.K.), is a tale of the fourth century. Mediolanum is the modern Milan; and Leo is the younger son of Leontius, a prominent citizen and a Christian. The tale runs from 374 to 387 A.D., and illustrates the strenuous struggles to maintain the Catholic (Nicaean) faith against the heresy of the Arians, under the leadership of Ambrosius (St. Ambrose), the Bishop of Mediolanum. The three principal characters, Leo, Crispus (brother of Leo), and Glycerius—Christian priest, Christian soldier, and Christian lawyer—are all strongly influenced by the Bishop. The story is well thought out, and it is written with much insight into the religious conditions of the period and with great spirit. Illustrations by Adolf Thiède.

The Royal Road, by Mary H. Debenham (2s. 6d., National Society's Depository), is a simple story quietly and agreeably narrated. It opens in the year 1247, on a May afternoon, when there is feasting in the Savoy Palace on the occasion of the wedding of two Provençal ladies to two young English nobles, wards of the Crown. Eventually it takes the hero off to a Crusade, where he of course distinguishes himself; and all's well that ends well on another afternoon in another May. Four full-page illustrations by Isabel Watkin.

The Failure of a Hero, by M. Bramston (2s., S.P.C.K.), is "a tale of Shakesperian days"; or, rather, it "is less a work of fiction proper than a set of pictures of the great Elizabethans of the last decade of the sixteenth century, strung together upon the possible experiences of a lad of the period." The author has her own solution of the problem of the Essex rising; and if Shakespere (so she spells the name) did not, so far as is positively known, act the character of Prospero, "neither is there any historical reason why" he should not have done so. The story is deftly woven and charmingly written. Illustrations by Adolf Thiède.

Under Puritan Rule, by Agnes Giberne (3s. 6d., National Society's Depository), is "a tale of troublous times," depicting family life in England during the Civil War. "Many of the characters, many of the scenes described," the author avers, "are absolutely true." Minor matters are handled freely in the interest of dramatic effect, "but in all matters of history, in all that concerns the habits and the spirit of the times, in the progress of the war, in the desecration of churches and cathedrals, I have kept to that which actually took place, only weaving in with facts some characters and circumstances of fiction." This is all to the good, and the narrative does not suffer. The interest is briskly maintained throughout. Five full-page illustrations by Isabel Watkin.

Shepperton Manor, by the late Rev. J. M. Neale (2s. 6d., S.P.C.K.), is a reprint, but none the less welcome for that. It presents an interesting and instructive picture of the English Church at the beginning of the seventeenth century—its external relation to Puritans and to members of the Roman communion and its internal discipline and ceremonies. Though a few anachronisms have been admitted, yet "the minutest attention has been paid, in essential matters, to accuracy." The delineation of Bishop Andrewes is strikingly careful and successful. Illustrations by W. S. Stacey.

The Marquis's Heir, by A. H. Biggs, M.A. (2s. 6d., S.P.C.K.), is "a tale of the early years of the French Revolution," narrated with close fidelity to the ascertainable historical facts. The real hero is an English youth, whose adventures will be followed with unfailing interest; and, of course, they are intertwined with the fate of the Marquis and the discovery and the fortunes of his heir. The story is elaborately worked out and briskly written. Illustrations by Harold Piffard.

Tales of Adventure.

Chillagoe Charlie, by Robert M. Macdonald (5s., Fisher Unwin), introduces us to "a flourishing sulphury-smelling settlement" in the heart of York Peninsula in Northern Queensland just when a Government reward is offered for the arrest of "the man known throughout North Queensland as Chillagoe Charlie." Things are lively enough in Caledonia Camp, and the rush at Crocodile Crossing increases the excitement, which is not lowered by the midnight riders; and still there is much going and coming of miners and troopers before Charlie of Chillagoe is unmasked. We should recommend readers to keep an observant eye on the fighting parson. Mr. Macdonald writes vigorously and draws varied materials from personal experience. Coloured frontispiece and sixteen other illustrations by Archibald Webb.

The Secret of the Sargasso, also by Robert M. Macdonald (5s., Fisher Unwin), is another dashing story of adventure, this time on the ocean wave. The chief of a sea-rover may be ousted by an ambitious lieutenant, may build himself a new ship and race the other thousands of miles, and may, after all, regain the upper hand. The intrigues are complicated; scientific inventions for speed are marvellous; the personal expedients are ingenious and novel. A rich American's yacht crosses the track of the Cosmopolites, and his daughter and her friend bring a special strain of adventure and a spice of tenderness into the *mêlée*. The story is of the breezy, ingenious, and forceful character that the natural boy delights in. Coloured frontispiece and sixteen other illustrations by Archibald Webb.

Adventures in the Arctic Regions, by H. W. G. Hyrst (5s., Seeley), recounts "romantic incidents and perils of travel, sport, and exploration around the Poles" in great variety. Mr. Hyrst piously seeks out and brings to the front many explorers whose names are generally forgotten—King, Maguire, Snow, and others—and less known heroes that served under renowned explorers that carried off all the fame of their common enterprises. The period is mainly the first sixty years of the nineteenth century, before science had reduced the more romantic features of Polar exploration. The book is full of interest, and comes at an opportune moment. Sixteen illustrations and artistic get-up.

Marvels of Nature and of Science.

Leisure Hours with Nature, by E. P. Larken (5s., Fisher Unwin), is a most charming volume, written apparently from direct experiences and thoughtfully suggestive. It is concerned mainly with the more common beasts, birds, &c., in multifarious aspects, including the poetical and romantic. No reader with a real sense of Nature will dip into a chance page without being fascinated, whether with the ways of the different animals or with popular fancies about them, or with particular anecdotes about particular performers. The volume is very instructive without laying itself out too openly to instruct, and is pleasantly written. There are seventy-one excellent illustrations beautifully reproduced.

Extinct Animals, by Sir E. Ray Lankester, LL.D., F.R.S., late Director of the Natural History Departments of the British Museum, Correspondent of the Institute of France (3s. 6d. net, Constable), appears in a new edition, with 218 illustrations. The descriptive matter is a corrected shorthand report of a course of lectures "adapted to a juvenile audience" at the Royal Institution half-a-dozen years ago. The volume, therefore, "will not be regarded as anything more ambitious than an attempt to excite in young people an interest in a most fascinating study," and, of course, "does not profess to give more than a peep at the strange and wonderful history of extinct animals." We hope that many readers will take a peep at these animals through Sir E. Ray Lankester's glasses and excellent illustrations.

Botany of To-day, by G. F. Scott Elliot, M.A., B.Sc., &c. (5s., Seeley), is not a systematic treatise on the science, but "a popular account of recent notable discoveries." Those that have read Mr. Scott Elliot's previous books of a similar popular character will not miss this one. He divests the subject, as far as possible, of cumbersome technical terms, and presents his story in plain and simple language, and a most interesting and instructive story it is. An admirable book to put into the hands of young folk. Twenty-seven illustrations.

By the Deep Sea, by Edward Step, F.L.S. (3s. 6d. net, Jarrold), is very welcome in a fourth edition, thoroughly revised and brought up to date. It is "a popular introduction to the wild life of the British shores"—very simple, engaging, and accurate. It is furnished with 128 illustrations, many of them new (we think), and it is strongly and tastefully got up. An excellent companion for the seaside.

Astronomical Curiosities, by J. Ellard Gore, M.R.I.A., &c. (6s. net, Chatto & Windus), is a piquant collection of "facts, fallacies, and paradoxes." These are grouped under the various heavenly bodies to which they refer, and there is no intention to furnish any continuous or systematic exposition—one may dip in at a venture without missing connexion. Yet these isolated paragraphs are extremely interesting, many of them amazing; and they provide much material for reflection. Not much of the information is found in popular works on astronomy. The volume is sure to excite much interest in the subject.

The Romance of Modern Manufacture, by Charles R. Gibson (5s., Seeley), is "a popular account of the marvels of manufacturing," after the manner of the author's former volumes in the series—"The Library of Romance." Mr. Gibson "has endeavoured to trace the evolution of the different industries, and to describe in everyday language the methods of modern manufacture in our principal industries." The story of developments is absorbing and astonishing, and must have cost the author immense labour of investigation. The reading of this book will open the eyes of the present generation, old as well as young. It is simply and clearly written, and tastefully produced. Twenty-eight illustrations and sixteen diagrams.

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(*Continued on page* 470.)

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Aspects of Modern Oxford, by A. D. Godley, M.A., Fellow and Tutor of Magdalen College (2s. net, Seeley), is a new edition of a book that first appeared some sixteen years ago. "Many things have happened since then," Mr. Godley imagines the critics saying; "there is a new golf course, and no one now plays ringoal." Perhaps one of his two defences is good enough: "What was true in 1893 is still true in 1909, because Oxford only appears to alter, and in reality remains much the same." He speaks charmingly of dons and colleges, undergraduates, sightseers, examinations, and so forth; and one promptly forgets about the original date of the book. The illustrations are numerous and excellent.

FOR THE CHILDREN.

The Rosebud, and other Tales, by Arthur Kelly (6s. net, Fisher Unwin), is a very handsome volume of charming stories about familiar objects—rosebud, mirror, lump of coal, soap-bubbles, &c.—lavishly and splendidly illustrated in colours by Walter Crane.

The Rainbow Book, by Mrs. M. H. Spielmann (5s. net, Chatto & Windus), offers a considerable number of delightful "tales of fun and fancy," with abundance of illustrations by artists of renown. The fairy people are liberally represented in eight marvellous "adventures in Wizard Lane." Then there is Father Christmas: "here the children will find revealed and laid bare the secret and mystery of Santa Claus." "And for the first time in the history of romance we discover what it was that the Sleeping Beauty dreamt." And so forth. The get-up is worthy of the contents.

Five Little Peppers Midway, by Margaret Sidney (6s., Fisher Unwin), is brisk and whimsical enough, with a transatlantic flavour. As it is said to be in its 119th thousand, it appears to have enjoyed popularity among American children. There are eight good full-page illustrations by Herman Heyer.

The Fairies' Fountain, and fourteen other stories, by the Countess Evelyn Martinengo Cesaresco (3s. 6d. net, Fisher Unwin), will delight the children. The type is very liberal, and there are fifteen illustrations (besides the frontispiece) by Charles Robinson.

The Rose and the Ring, by Thackeray (3s. 6d. net, Chatto & Windus), is a charming edition of a perennial favourite, with fifteen full-page plates and thirty illustrations in the text by Gordon Browne.

A Wonder Book and *Tanglewood Tales*, by Hawthorne, are combined in a substantial volume (6s., Fisher Unwin), with four coloured plates and twenty-four other full-page illustrations by Willy Pogani. A handsome edition.

VARIOUS.

Messrs. Adam & Charles Black publish cheap editions of Farrar's School Tales—(1) *Eric; or, Little by Little;* (2) *St. Winifred's, or, The World of School;* and (3) *Julian Home, a Tale of College Life*—at 6d., 1s., 1s. 6d., 2s. 6d., and 3s. 6d. each, according to get-up. The more expensive of these inexpensive styles are very suitable for Christmas gifts, and the stories will be as good as new to a fresh generation of young readers.

Reuben the Fisherman, by William Webster (2s., S.P.C.K.), "a Lowestoft romance," is plainly and forcibly written, and in excellent tone. The prologue records the finding of a child by the roadside, and, when Reuben, leaving home in a temper, joins his first boat at Lowestoft, his captain tells him that he, too, has lost a child that might now probably be pretty like the new fisherman. Whether there was or was not an eventual identification we will not reveal. Meantime, the first voyage brings adventures; a trip to northern fishing grounds introduces complications; there are extended experiences on a trawler; and various tangles have to be unravelled. The interest is briskly maintained. Illustrations by Harold Piffard.

Ten Great and Good Men, by Henry Montagu Butler, D.D., Master of Trinity College, Cambridge (6s. net, Edward Arnold), consists of lectures sketching the character, the achievement, and the permanent influence of well known men in various walks of life: Burke, Pitt, Canning, John Wesley, Wilberforce, Lord Shaftesbury, John Bright, Gordon, Dr. Arnold, and Thomas Erskine of Linlathen. The lectures do not profess to be critical or complete, but they are well informed on the main facts, and select efficiently the points likely to impress a youthful or general audience. They will be very useful to "men or women who are from time to time called upon to give addresses in schoolrooms or to Young Men's Christian Associations, and the like."

The National Society's Depository issues several volumes of a sober tone, inculcating quietly some moral, and agreeably and interestingly written: (1) *Seven, and One More*, and three other stories, by Katharine E. Vernham, with two full-page illustrations by Isabel Watkin (1s. 6d.); (2) *Cousin Becky's Champions*, by Eleanora H. Stooke, with two full-page illustrations by Isabel Watkin (2s.); (3) *The Mystery of a Pink Stud*, by Mary E. Shipley, with frontispiece (1s.). Also *A Fair Haven*, and other stories for Sunday evenings, by Mary H. Debenham, which is of a more pointedly religious tone, the stories being based on incidents in the lives of notable Churchmen or other religious personalities. It completes a series for fifty-two Sunday evenings, and has four full-page illustrations by Violet M. Smith (2s.).

FIRST GLANCES.

CLASSICS.

Homer, The Iliad of. Books XI and XII. Translated by E. H. Blakeney, M.A. 1s. Bell (Classical Translations).

[Sedulously careful. Calverley's translation of "The Catalogue of the Ships" is appended.]

Latin Lessons, First. With English Exercises based on the Text. By C. M. Dix, M.A., Assistant Master in the Oratory School, Edgbaston, and Lecturer in Latin and Greek in the Birmingham and Midland Institute. 2s. Rivingtons.

["For the use of preparatory and all types of secondary schools." To end of deponent verbs. Lessons continuous in sense and carefully graduated—stories, conversations, historical incidents, easy poetry, &c. Grammar and exercises corresponding. Vocabularies, special and general. Elaborately worked out; claims attention.]

Ovid: Metamorphoses. Book III. Edited by M. Cartwright, M.A. Wales, Classical Mistress at the County School, Abertillery. 2s. Clarendon Press.

[Good introduction; useful notes; vocabulary.]

Pliny's Natural History: Selections from Books VIII–X. Edited by L. D. Wainwright, M.A., Assistant Master, St. Paul's School. 2s. net. Alston Rivers.

[Treats of land animals, fishes, and birds. Brief introduction, biographical and critical. Notes unpretentious, but useful.]

Vergil: Aeneid Book VIII. Edited by L. D. Wainwright, M.A., Assistant Master, St. Paul's School. 1s. 6d. Bell (Illustrated Classics).

[Text paragraphed, with summaries; serviceables notes; vocabulary. Introduction careful and adequate.]

MATHEMATICS.

Arithmetic, The Intermediate. Edited by J. L. Martin, Head Master of the Adcroft School, Trowbridge. Parts I and II, complete, 1s. Harrap (New Concrete Practical Arithmetic).

Calculus, Differential, A Text-book of, with numerous worked-out examples. By Ganesh Prasad, B.A. Cantab., D.Sc. Allahabad, Professor of Mathematics in Queen's College, Benares. 5s. Longmans.

["Strictly rigorous, and at the same time simple, exposition of the Differential Calculus and its chief applications."]

Calculus, Differential and Integral, Elements of the. By A. E. H. Love, M.A., D.Sc., F.R.S., Sedleian Professor of Natural Philosophy in the University of Oxford. 5s. Cambridge University Press.

["Intended merely to help the reader to make a beginning."]

Geometry, Differential, of Curves and Surfaces, A Treatise on the. By Luther Pfahler Eisenhart, Professor of Mathematics in Princeton University. 26s. Ginn.

[Elaborate work; many examples.]

Geometry, Projective, Elementary. By A. G. Pickford, M.A., M.Sc., sometime Scholar of St. John's College, Cambridge, Head Master of the Hulme Grammar School, Oldham. 4s. Cambridge University Press.

[For upper forms of schools and junior University students.]

EDUCATION.

Arts, The Royal Society of: Programme of Examinations for 1910, with the Examination Papers of 1909. 3d.; post free, 4½d. Bell.

Board of Education. (1) Reports from Universities and University Colleges in Great Britain participating in Parliamentary Grant for University Colleges in 1907–8. Cd. 4875. 2s (2) National Competition, 1909: List of Rewards and Examiners' Reports. 3s. (3) Statistics of the Certificate Examination for Teachers in Elementary Schools. 1908. 6d. (4) Statistics of Public Education in England and Wales. Part I, Educational Statistics, 1907–8. Cd. 4885. 2s. 3d. (5) How to become a Teacher in a Public Elementary School. 4d. Wyman.

[(1) ought to be drastically abridged, and the reports should be framed on a uniform plan.]

Cambridge Local Examinations, July, 1909. Supplementary Tables and Lists. 1s.; by post, 1s. 1d. Cambridge University Press.

Cassell's Popular Educator. Part I. 3d. net. Complete in 64 weekly parts. New and revised edition.

London: University College. Calendar for 1909–10.

Manchester: The Journal of the Municipal School of Technology. Vol. I, Part 3. Valuable abstracts of papers, chiefly in Physics and Chemistry.

Matriculation Directory. No. 53, September, 1909. With articles on Text-books. 1s. net. Clive.

Oxford, The Student's Handbook to the University and Colleges of. 18th edition, revised to September, 1909. 2s. 6d. net; by post, 2s. 10d. Clarendon Press.

Queensland, Secondary Education in. By Percy F. Rowland, late Scholar of Hertford College, Oxford. Townsville: Willmett.

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MATHEMATICS.

11067. (H. J. WOODALL.)—Prove that there do not exist three consecutive numbers whose prime factors are all low; if possible, find the greatest ratio of middle number to highest prime factor.

Solution by Professor E. B. ESCOTT.

The Question is quite indefinite, as to what is meant by "low." In the answer to my Questions 15500 and 15572 (November 1, 1904), I have given sets of three consecutive numbers with comparatively small factors, *i.e.*, ratio of number to largest factor,

$7534240 = 2^5.5.7^2.31^2$	
$7534241 = 11.13.19.47.59$	90774
$7534242 = 2.3^3.41^2.83$	
$15473808 = 2^4.3^3.7^2.17.43$	
$15473809 = 13^2.19.61.79$	195871
$15473810 = 2.5.11.41.47.73$	
$306331584 = 2^6.3.13.31.37.107$	
$306331585 = 5.7^4.17.19.79$	2028686
$306331586 = 2.11^2.83.101.151$	
$315630755 = 5.11.17.19.109.163$	
$315630756 = 2^2.3^6.7^2.47^2$	1936385
$315630757 = 13.37.73.89.101$	
$940737005 = 5.13.31.41.59.193$	
$940737006 = 2.3^2.11^2.19.127.179$	4874285
$940737007 = 7.17.23.47.71.103$	

It is easy to see that there is no limit to the ratio of the middle number to the highest factor,—

$$\tfrac{1}{120}(x^3-49x-120) = \tfrac{1}{120}(x-3)(x-5)(x+8),$$
$$\tfrac{1}{120}(x^3-49x) = \tfrac{1}{120}x(x-7)(x+7),$$
$$\tfrac{1}{120}(x^3-49x+120) = \tfrac{1}{120}(x+3)(x+5)(x-8),$$

are consecutive integers when

$$x \equiv 0, 8, 32 \pmod{40} \quad \text{or} \quad x \equiv 3, 5, 7 \pmod{10}.$$

The greatest prime factor of the three consecutive integers is not greater than $x+8$.

The ratio of the middle term to $x+8$ is $(x^3-49x)/[120(x+8)]$, which evidently has no limit as x increases.

16718. (*Communicated by* Professor K. C. SIH.)—Sum the series

$$\frac{1+2+3+4}{1.2.3.4} + \frac{5+6+7+8}{5.6.7.8} + \frac{9+10+11+12}{9.10.11.12} + \ldots \text{ ad inf.}$$

Solution by T. W. CHAUNDY *and many others.*

The general term is

$$\frac{(4n-3)+(4n-2)+(4n-1)+4n}{(4n-3).(4n-2).(4n-1).4n} = \frac{2(8n-3)}{(4n-3)(4n-2)(4n-1)4n}$$
$$= \frac{1}{4n-3} - \frac{1}{4n-2} - \frac{1}{4n-1} + \frac{1}{4n}.$$

Hence the sum is

$$\tfrac{1}{1}-\tfrac{1}{2}-\tfrac{1}{3}+\tfrac{1}{4}+\tfrac{1}{5}-\tfrac{1}{6}-\tfrac{1}{7}+\tfrac{1}{8}+\ldots = 1-\tfrac{1}{3}+\tfrac{1}{5}-\tfrac{1}{7}+\ldots-\tfrac{1}{2}+\tfrac{1}{4}-\tfrac{1}{6}+\ldots$$
$$= \tfrac{1}{4}\pi - \tfrac{1}{2}\log_e 2.$$

15294, 16486, 16575, 16687. (15294.) (H. BATEMAN.)—TP, TQ are the tangents from T to one of a system of confocal conics. Prove that the circles of type TPQ are coaxal.

(16486.) (H. L. TRACHTENBERG, B.A.)—Three conics are described touching the circum-circle of a triangle ABC: the first touches the sides AB, AC at B, C; the second BC, BA at C, A; the third CA, CB at A, B. If L_1, L_2, L_3 are the points of contact with the circum-circle, prove that AL_1, BL_2, CL_3 are concurrent in the symmedian point.

(16575.) (W. F. BEARD, M.A. Suggested by Question 16486.)—ABC is a triangle; a conic is described to touch AB, AC at B, C and to touch the circum-circle; if P is the point of contact and PQR is drawn parallel to BC to meet the circle at Q and the conic at R, prove

$$PQ = QR.$$

(16687.) (W. F. BEARD, M.A.)—TQ, TQ′ are tangents to an ellipse, centre C, foci S, S′, such that the circle TQQ′ touches the ellipse again at P. If QQ′ meets the tangent at P at X, prove that (i) XT touches the circle; (ii) TP is half the central chord of curvature at P; (iii) the centre of curvature at P lies on the circle TQQ′; (iv) T lies on the circle SPS′; (v) $CP.CT = CS^2$.

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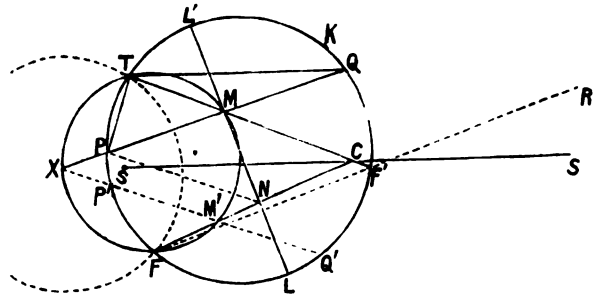
Solution by C. E. YOUNGMAN, M.A.

SCS′ as usual. The envelope of PQ (obvious from its equation) is a parabola; the directrix is CT, because two perpendicular positions of PQ are the axes CA, CB, and two more are the tangents at T to those confocals which pass through T; these two, TL, TL′, bisecting the angle STS′, bisect PTQ also. Now CT bisects PQ at M; therefore a fifth tangent to the parabola is LML′, the axis of PQ. Thus TLL′ is a triangle of tangents, and the circle about it, *i.e.* the circle TPQ, goes through the focus, a fixed point F.

The relation of T to F is the same as that of F to T. For F′, the image of F in the tangent LL′, lies on the directrix TM and also on the circle TPQ; therefore $\angle PTF = \angle QTF'$, TF is a symmedian of TPQ, MF = MF′, PQ bisects $\angle TMF$, and $MT.MF = MP^2$. And all this holds for S, C, S′, as much as for P, M, Q, of which they are special positions.

Another circle through F circumscribes the triangle formed by TL, TL′, and PQ. Its centre X lies on PQ, and it cuts TPQ orthogonally at T and F, so that T (XPFQ) is harmonic: therefore, for the confocal PQ, X is the pole of TF. If, then, tangents FP′, FQ′ be drawn from F to the conic, P′Q′ goes through X; at the same time the circle FP′Q′ goes through T, and cuts orthogonally that coaxal circle whose centre lies on P′Q′. That centre therefore is X; hence FP′Q′ is the same circle as TPQ.



Consequently, when TPQ touches the conic, it is at F; so that here is proof of 16486, and of (i), (iv), (v) in 16687.

Again (the circle still touching at F), let FF′ cut the conic at R. Then FR and PQ are parallel chords, and TCF′ bisects them; which is 16575. And always P′Q′ is bisected both by CF and by the circle FXTM; therefore when F is on the conic CF touches that circle, and CF, FT are equally inclined to FX, and have equal chords cut from them by any circle touching FX.

But the axis CS makes equal angles with PQ and FX, *i.e.* with FR and FX, chord and tangent; therefore the circle of curvature at F goes through R, and all chords in it are double the corresponding chords in TPQ, on which will lie its centre K, opposite to F. Hence (ii) and (iii) of 16687. [Rest in *Reprint*.]

16571. (W. J. GREENSTREET, M.A.)—If $\Sigma a = \Sigma x = \Sigma ax = 0$, then

$$\Sigma ax^7 = xyz\Sigma x^2\Sigma ax^2.$$

Additional solution by S. NARAYANAN, B.A., L.T.

From the given equations, we get

$$x : y : z = b-c : c-a : a-b \text{ and } a : b : c = y-z : z-x : x-y.$$

Therefore
$$E \equiv \Sigma ax^7 = \Sigma(y-z)x^7 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(i)}$$
$$= \Sigma a(b-c)^7 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(ii)}.$$

(i) has evidently $\Pi(y-z)$ as factors, and (ii) has $\Pi(b-c)$ as factors, but $\Pi(y-z) = \Sigma x^2(y-z) = \Sigma ax^2$, and $\Pi(b-c) = xyz$, the constants being omitted.

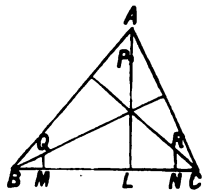
Now we have 6 factors. The last factor should be of the second degree in a, b, c, x, y, z, and, since a, b, c occur only in the first degree and in virtue of the given relations, it is easily seen that the fourth factor is Σx^2. Therefore $\Sigma ax^7 = xyz\Sigma x^2.\Sigma ax^2$.

16525. (JAMES BLAIKIE, M.A.)—Points P, Q, R are taken on the altitudes of a triangle ABC such that AP/BC = BQ/CA = CR/AB; prove that the centroids of PQR, ABC coincide. Hence show that the centroids of the triangles formed by joining (1) the vertices, (2) the centroids of the equilateral triangles described similarly on the three sides of any triangle coincide with the centroid of the original triangle.

Solutions (I) *by* M. T. NARANIENGAR, M.A.; (II) *by the* PROPOSER *and* SONTI PURUSHOTHAM; (III) *by* B. C. WALLIS, F.C.P., B.Sc. (Econ.).

(I) This follows at once from the property of the mean centre, viz., if AA′, BB′, CC′, ..., are measured parallel and proportional to the sides of a *closed polygon* in order, then the mean centres of ABC ... and A′B′C′ ... are the same.

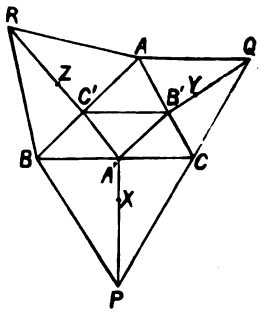
(II) Let ABC be the triangle; P, Q, R the points on the altitudes; and let PL, QM, RN be perpendicular to BC.



We have $AP = ma$, $BQ = mb$, $CR = mc$;

therefore
$$MQ + RN = mb\cos C + mc\cos B$$
$$= ma = AP.$$

Thus the sum of the distances of P, Q, R from BC is equal to the sum of the distances of ABC. Similarly for the distances from CA, AB. Thus the centroids coincide. In the case of the equilateral triangles the points P, Q, R and the points X, Y, Z are points on the altitudes of the triangle A′B′C′ formed by joining the mid-points of ABC. Also their distances from A′, B′, C′ are proportional to B′C′, C′A′, A′B′. We have, therefore, two particular cases of the previous theorem. [Rest in *Reprint*.]



15784. (S. C. GOULD.)—Give all the different square numbers that can be formed by the ten digits. The proposer has developed eighty-seven such numbers. Are there any more?

Prof. E. B. ESCOTT draws attention to the following errors in the solution of Question 15734 (*v. Educational Times*, May, 1905; and *Reprint*, New Series, Vol. VIII, p. 83):—

81122 *should be* 81222; 77246 *should be* 77346;

86704 is wrong, and the number placed opposite (*viz.* 7518029436) is not a square.

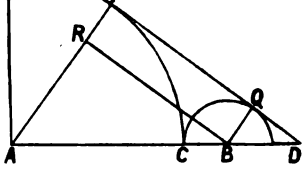
16489. (C. E. YOUNGMAN, M.A.)—Two circles (A), (B) touch externally at C, between A and the other centre of similitude D. If A and D be fixed points, prove that the common tangent of (A) and (B) is longest when AB = 2CD.

Solutions (I) *by* JAMES BLAIKIE, M.A., *and* SARADAKANTA GANGULI, M.A.; (II) *by* M. T. NARANIENGAR, M.A.; (III) *by* S. G. SOAL.

(I) Let PQ be the common tangent from D, and draw BR parallel to PQ. Then

$$PQ^2 = RB^2 = AB^2 - AR^2$$
$$= (r+r')^2 - (r-r')^2 = 4rr'$$

if $AP = r$, $BQ = r'$. Let $AD = a$.



By similar triangles

$$AD/AP = AB/AR,$$

whence $r' = r(a-r)/(a+r)$.

Thus PQ will be a maximum when $r^2(a-r)/(a+r)$ is a maximum.

Differentiating we obtain the condition $a^2 - ar - r^2 = 0$ which may be written $ar/(a+r) = a-r$.

Again $AB = r + r' = 2ar/(a+r)$, $CD = a-r$.

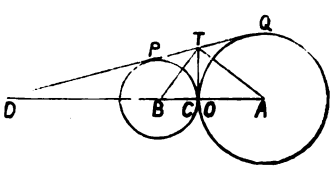
Thus the condition for a maximum is identical with the relation AB = 2CD.

(II) Now PQ = 2CT; therefore PQ is greatest when

$$CT^2 = BC.CA$$

is greatest. Let

$$OB = OA = x;$$



then $OC.OD = OB^2$,

i.e., $OC = x\lambda$ and $OD = x/\lambda$ (say);

therefore $AD = x/\lambda + x = x(1+\lambda)/\lambda = a$ (constant),

and $BC.CA = OB^2 - OC^2 = x^2(1-\lambda^2) = a^2\lambda^2(1-\lambda)/(1+\lambda)$.

Thus BC.CA is greatest when $\lambda^2 + \lambda = 1$, *i.e.*, $x/\lambda - x\lambda = x$, or DC = OB, *i.e.*, AB = 2CD. [Rest in *Reprint*.]

16719. (Professor SANJÂNA, M.A.)—Show that numbers of the form $x^4 - x^2y^2 + y^4$ can be resolved into two algebraic factors for a multiply infinite number of corresponding values of x and y. Hence factorize

$$120^6 + 119^6, \quad 193^6 + 141^6, \quad 243^6 + 242^6, \quad 447^6 + 445^6.$$

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

Numbers $N = x^4 - x^2y^2 + y^4$ can be resolved algebraically into two co-factors for a great variety of relations between x, y. Four of the most important relations are when $2xy$ or $6xy = \square$, and when $y^2 \sim x^2 = z^2$ or $3z^2$. These four factorizations have been fully explained in the writer's solutions of such questions in this paper recently.

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The Proposer's third example is a case of $6xy = \square$. Here $x = 243$, $y = 242$, $6xy = (6\cdot99)^2$.

$N = L.M$, where $L = P-Q$, $M = P+Q$.

$$P = x^2+3xy+y^2 = 294031, \quad Q = \sqrt{(6xy)}\,.\,(x+y) = 288090,$$

whence $L = 5941 = 13.457$, $M = 582121 = 37.15733$.

A general method for generating whole series of such factorizable Sextans, and of (at same time) factorizing them, is indicated in Art. 37A of the writer's paper on "Diophantine Factorization of Quartans" in *Messenger of Mathematics*, Vol. 38, 1909, page 169; this method—as applied to Sextans—is fully detailed in Chapter IV of a paper on "High Sextan Factorizations" now appearing in that journal.

It appears probable that every factorizable Sextan is connected with a certain (solvable) 2-ic Diophantine equation. The process is not well suited for factorizing *given* Sextans—*i.e.*, when only x, y are given, as it is not easy to discover the Diophantine equation suited to the given number from the data x, y only.

The complete factorization of the four examples (into prime factors) is given below:

$x, y =$	120, 119	193, 141	243, 242	445, 447
$x^2+y^2 =$	13.13.13.13;	2.5.29.197;	337.349;	17.11701;
$x^4-x^2y^2+y^4 =$	61.3343861;	73.733.19477;	13.457.37. 15733;	13.709. 1933.2221;

The small divisors (<1000) of the numbers < 9 million were found by actual trial of all small primes $p = (12\varpi+1)$, and the rest from the large Factor Tables.

Orthogonal Projection.

By W. GALLATLY, M.A.

1. Let the triangle ABC be projected orthogonally into the triangle LMN with angles λ, μ, ν, area Δ', and sides l, m, n.

Let θ be the angle between the planes of the two Δ's. Denote the heights of A, B, C above the plane of projection by h_1, h_2, h_3. Then,

since $$(h_2-h_3)+(h_3-h_1)+(h_1-h_2) = 0;$$

therefore $$\sqrt{(a^2-l^2)} \pm \sqrt{(b^2-m^2)} \pm \sqrt{(c^2-n^2)} = 0.$$

This leads to

$$4m^2n^2-(m^2+n^2-l^2)^2+4b^2c^2-(b^2+c^2-a^2)^2 = 2.\Sigma.a^2(m^2+n^2-l^2)$$
$$= 2.\Sigma.l^2(b^2+c^2-a^2).$$

Now $$\cot A = (b^2+c^2-a^2)/4\Delta : \cot B + \cot C = a^2/2\Delta;$$

therefore $$16\Delta'^2+16\Delta^2 = 16.\Sigma.\cot\lambda\,(\cot B+\cot C)\,\Delta\Delta'$$
$$= 16.\Sigma.\cot A\,(\cot\mu+\cot\nu)\,\Delta\Delta';$$

therefore $$\Sigma.\cot\lambda\,(\cot B+\cot C) = \Sigma.\cot A\,(\cot\mu+\cot\nu) = \Delta'/\Delta+\Delta/\Delta'$$
$$= \cos\theta+\sec\theta;$$

therefore $$\Sigma.a^2\cot\lambda = 2\Delta\,(\cos\theta+\sec\theta),$$

and $$\Sigma.l^2\cot A = 2\Delta'\,(\cos\theta+\sec\theta).$$

This algebraic treatment of orthogonal projection does not appear in our text-books, and may therefore be unfamiliar to many students.

2. If ABC is equilateral, then

$$(l^2+m^2+n^2)\,1/\sqrt{3} = 2.\Delta'\,(\cos\theta+\sec\theta),$$

so that, if ω be the Brocard angle of LMN,

$$\cot\omega = (l^2+m^2+n^2)/4\Delta' = \tfrac{1}{2}\sqrt{3}\,(\sec\theta+\cos\theta).$$

Hence the following theorem:—Coplanar equilateral triangles project orthogonally into triangles having the same Brocard angle.

3. The above results, with those obtained in the article on "Pedal and Antipedal Triangles" (*v. Reprint*, New Series, Vol. XVII, p. 79), lead to a simple proof of Professor J. Neuberg's generalization of Lhuilier's theorem, which may be thus stated:—Let x, y, z and x', y', z' be the sides of the two antipedal triangles whose angles are λ, μ, ν: and let the triangle ABC be projected into the triangle LMN with angles λ, μ, ν. Then, if l, m, n are the sides of LMN,

$$2l = x-x' : 2m = y-y' : 2n = z-z'.$$

For, if Δ_2 and Δ'_2 be the areas of the antipedal Δ's, and $\Delta' = \Delta\cos\theta$, the area of LMN, then

$$2\Delta_2 = \Sigma.a^2\cot\lambda+4\Delta = 2\Delta\,(\cos\theta+\sec\theta)+4\Delta.$$

Therefore $$\Delta_2/\Delta = [\sqrt{(\sec\theta)}+\sqrt{(\cos\theta)}]^2.$$

Also $$2\Delta'_2 = \Sigma.a^2\cot\lambda-4\Delta;$$

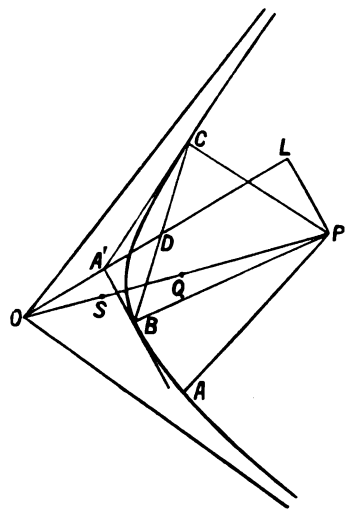
therefore $$\Delta'_2/\Delta = [\sqrt{(\sec\theta)}-\sqrt{(\cos\theta)}]^2;$$

therefore $$\sqrt{\Delta_2}-\sqrt{\Delta'_2} = 2\sqrt{(\Delta\cos\theta)} = 2\sqrt{\Delta'}.$$

But, since $\Delta_2, \Delta'_2, \Delta'$ are similar, their sides are as the square roots of the areas; therefore $x-x' = 2l, \ldots$.

16708. (C. E. YOUNGMAN, M.A.)—In a rectangular hyperbola, if normals at A, B, C meet at P, the nine-point circle of ABC subtends a constant angle at P.

Solutions (I.) *by* V. RAMASWAMI AIYAR, M.A.; (II.) *by* W. F. BEARD, M.A., *and* M. T. NARANIENGAR, M.A.



Let D, E, F be the middle points of the sides of the triangle ABC; O the centre of the hyperbola; A', B', C' the vertices of the triangle formed by the tangents drawn to the hyperbola at A, B, C. These should lie on the diameters OD, OE, OF. Let L, M, N be the feet of the perpendiculars from P on these lines.

By properties of the hyperbola

$$BD.DC \text{ or } DC^2 = DO.DA'.$$

But $$BD.DC = A'D.DL,$$

since B, C, L lie on the circle on A'P as diameter; therefore

$$DO = DL;$$

therefore $\triangle LMN$ is homothetic to $\triangle DEF$ with respect to centre O, and double of it in size. Now OP is obviously a diameter of the circum-circle of LMN; therefore, Q being the middle point of OP, OQ is a diameter of the circum-circle of DEF, that is, of the nine-point circle of ABC. The centre of this circle is therefore S, the middle point of OQ. Its radius SO, or SQ, is one-third of SP, which proves the theorem. [Rest in *Reprint*.]

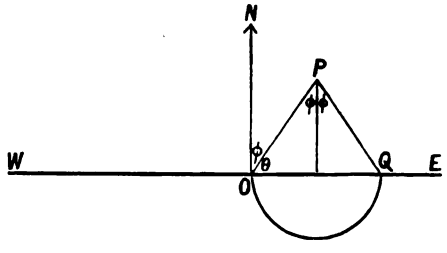
15932. (A. M. NESBITT, M.A.)—A person buys a ticket in a lottery. This ticket contains 80 symbols, of which he crosses out 10. Having done so, he compares it with a similar ticket held by the lottery keeper, in which 20 of the symbols are crossed out. Find the chance (1) that the 10 symbols he has crossed out agree with 10 of the 20 crossed out by the lottery keeper; (2) the chance that there is an agreement as to 5 of the symbols so crossed out by the purchaser and the lottery keeper.

Note by the PROPOSER.

The thing actually occurred in Melbourne in 1905; the lottery keeper offered 2800 to 1 for (1), and 2 to 1 for (2). My object was to get an approximation to the true odds in a form of which a court of justice would be able to grasp the result. On cancelling down the first answer I find $(23.34.67).(22.13.7).(62.61)$. Now the first three factors give (approximately) 52400, the next three 2002, and the last two approximately 3600; and the product of these is about 37730 millions. Instead of getting £70 for his invested 6d. the Melbourne speculator ought to receive about £900,000,000—a slight variation in favour of the astute lottery keeper. With regard to (2) I obtained the approximate result $8\frac{3}{4}$ to 1; but this was some years ago, and I do not feel equal to the labour of verification. The Melbourne odds offered were, I believe, 2 to 1.

16023. (*Communicated by* "INQUIRER.")—A. starts from a point on a straight endless canal and walks 20 miles in a straight line in a random direction, and then camps for the night. Next morning he starts off in a random direction, and keeps walking in a straight line. What is the chance of his meeting the canal again before he has walked more than 20 miles?

Solution by R. CHARTRES.



Let O be the starting point, and P the position at the end of the first day; then the chance of striking WE the second day

$$= M(OPQ)/2\pi = 2M(\phi)/2\pi = \tfrac{1}{4}.$$

θ must be measured all round in the same direction.

The above was suggested by Mr. Youngman's interesting note (*vide Educational Times*, July, 1909, and *Reprint*, Vol. XVII, p. 18).

11370. (The late Professor CLIFFORD, F.R.S.)—$\xi_1, \xi_2, \xi_3, \xi_4$ are connected with x_1, x_2, x_3, x_4 by the equations

$$2\xi_1 = -x_1+x_2+x_3+x_4, \quad 2\xi_3 = x_1+x_2-x_3+x_4,$$
$$2\xi_2 = x_1-x_2+x_3+x_4, \quad 2\xi_4 = x_1+x_2+x_3-x_4,$$

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find the x's and the sum of their squares, in terms of the ξ's; and prove that

$$\theta x_1 . \theta x_2 . \theta x_3 . \theta x_4 + \theta_1 x_1 . \theta_1 x_2 . \theta_1 x_3 . \theta_1 x_4 = \theta_1 \xi_1 . \theta_1 \xi_2 . \theta_1 \xi_3 . \theta_1 \xi_4 + \theta \xi_1 . \theta \xi_2 . \theta \xi_3 . \theta \xi_4 .$$

Solution (and Correction) by JAMES BLAIKIE, M.A.

By addition and subtraction we find that

$$2(\xi_2 + \xi_3 + \xi_4 - \xi_1) = 2x_1.$$

Therefore $x_1 = \xi_2 + \xi_3 + \xi_4 - \xi_1$, ...

Also, if we square each equation and add, we obtain

$$4(\xi_1^2 + \xi_2^2 + \xi_3^2 + \xi_4^2) = 4(x_1^2 + x_2^2 + x_3^2 + x_4^2)$$

or $$\Sigma x_1^2 = \Sigma \xi_1^2.$$

In the absence of any definition of θ and θ_1, it seems impossible to give a solution of the last part of the question.

QUESTIONS FOR SOLUTION.

In Question 16733 (Professor Morley), the Proposer desires to insert the words "originally straight," which were accidentally omitted in the manuscript. (See *Educational Times*, October, 1909.)

16751. ("INQUIRER.") — Professor Jevons in his "Pure Logic," page 65, expresses the opinion that the combination of equivalences (A = B + C) and (B = $c + d$), in which c and d are the negations of C and D, involves "subtle contradictions." Verify, or disprove, this opinion.

16752. (H. J. WOODALL, A.R.C.S.) — Nine skittles are placed in square array, and a ball (suspended by a cord from a point not quite overhead) is set in motion in an elliptic orbit. Find the conditions of the motion in order that *one* skittle may be knocked over during the *first* revolution of the ball in its orbit, a *second* in the *second* revolution, and so on.

16753. (*Communicated by* R. F. DAVIS, M.A.) — A. and B. started on their motor-cars from Liverpool to London, travelling at the same rate. One hundred miles from London A. overtook a carriage driving 9 miles an hour. Two hours later he met a bicyclist riding 12 miles an hour. B. overtook the carriage 73¾ miles from London, and met the bicyclist $\frac{59}{77}$ of a minute after passing the seventy-first milestone from London. Where was B. when A. got to London?

[This question recently appeared in the *Star* newspaper as a "Suggested Occupation for a Wet Saturday."]

16754. (Professor COCHEZ.)—Limite de $(\cos x + \sin x)^{\cot g\, x}$ lorsque x tend vers zéro.

16755. (Professor SANJÂNA, M.A.)—Sum to $n+1$ terms the following series:—

$$1 - \frac{n}{1!}\cdot\frac{b}{c} + \frac{n(n-1)}{2!}\cdot\frac{b(b+1)}{c(c+1)} - \frac{n(n-1)(n-2)}{3!}\cdot\frac{b(b+1)(b+2)}{c(c+1)(c+2)} + \ldots .$$

16756. (Professor E. B. ESCOTT.) — Find two equations of the 7th degree, with rational roots having all their terms alike except the known terms.

Example.—$x^7 - 4214x^5 + 4716649x^3 - 1218798036x - 69837768 = 0.$

Roots: 51, 33, 24, −7, −13, −38, −50.

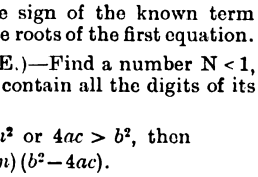
The second equation is the same with the sign of the known term changed, and the roots are the negatives of the roots of the first equation.

16757. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Find a number N < 1, which—when expressed as a decimal—shall contain all the digits of its smaller factor, and no more.

16758. (S. ANDRADE.)—If either $4ln > m^2$ or $4ac > b^2$, then

$$(2an + 2cl - bm)^2 \not< 4(m^2 - 4ln)(b^2 - 4ac).$$

16759. (R. CHARTRES.) — P is any point in the triangle. Show that the mean value of $\theta = \log 2$.



16760. (Professor NEUBERG.)—On donne trois plans quelconques α, β, γ et un point O. Par O, on mène une droite quelconque d qui rencontre α, β, γ aux points A, B, C. Trouver le lieu du point M de la droite d tel que le rapport anharmonique (ABCM) ait une valeur donnée K.

16761. (PULINBIHARI DAS, M.A.)—Prove that an arc of the curve

$$(x^2 + y^2 - 4a^2)^3 + 27a^2y^4 = 0$$

is proportional to the area of a focal sector of an ellipse.

16762. (M. T. NARANIENGAR, M.A.)—If O is a fixed point anywhere and P a point on a conic, find the envelope of the circle whose centre is at P and whose radius is $\sqrt{(r^2 - a^2)}$ where r stands for OP and a is a constant.

16763. (Professor NANSON.)—A parabola passes through three fixed points. Find the locus of the meet of tangents parallel to two fixed lines.

16764. (W. F. BEARD, M.A.)—A circle passing through the centre C of an ellipse cuts the curve in the points P, Q, R, S. Prove (1) that the rectangle under the perpendiculars from C on PQ, RS is constant; (2) that, if all of the points P, Q, R, S are real, the eccentricity of the ellipse is greater than $1/\sqrt{2}$; (3) that, if PQ passes through a fixed point, then the foot of the perpendicular from C on RS must lie on a fixed straight line.

16765. (S. NARAYANA AIYAR.)—The pedal circles of triangles inscribed in a conic with respect to a point on the conic are concurrent. Prove this and determine the point of concurrence. When the conic is a rectangular hyperbola, deduce that the point of concurrence is its centre.

16766. (D. BIDDLE.) — ABCD is a rectangle of known sides. BC being produced indefinitely, it is required to draw a straight line from A cutting CD, BC in X, Y respectively, the intercept XY being equal to a given straight line.

16767. (M. T. NARANIENGAR, M.A.)—Find, by a geometrical construction, the point on the circum-circle whose Simson line is parallel to the Euler line.

16768. (B. C. WALLIS, B.Sc., F.C.P.)—Under what conditions are the line joining the mid-points of two sides of a triangle, the line joining the feet of the perpendiculars from the opposite vertices, and the line joining the points of contact of the in-circle concurrent? How many sets of these lines may be concurrent simultaneously?

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

10849. (Professor WOLSTENHOLME, M.A., Sc.D.) — If V be the volume of a tetrahedron, Δ_0, Δ_1, Δ_2, Δ_3 the areas of the faces; prove that, if two opposite dihedral angles be (1) equal, (2) supplementary, then (1) the difference, (2) the sum of the lengths of the corresponding edges will be

$$[(\Delta_0 + \Delta_1 + \Delta_2 + \Delta_3)(\Delta_2 + \Delta_3 - \Delta_0 - \Delta_1)(\Delta_3 + \Delta_1 - \Delta_0 - \Delta_2) \times (\Delta_1 + \Delta_2 - \Delta_0 - \Delta_3)]^{\frac{1}{2}}/3V \ \ldots \ (1),$$

$$[(-\Delta_0 + \Delta_1 + \Delta_2 + \Delta_3)(\Delta_0 - \Delta_1 + \Delta_2 + \Delta_3)(\Delta_0 + \Delta_1 - \Delta_2 + \Delta_3) \times (\Delta_0 + \Delta_1 + \Delta_2 - \Delta_3)]^{\frac{1}{2}}/3V \ \ldots \ (2).$$

11198. (Rev. H. SEWELL, M.A.) — The recurring quotients in $\frac{1}{2}(2 + 10^{\frac{1}{2}})$ are found to be in the order 1, 1, 2; and those of $\frac{1}{3}(4 + 10^{\frac{1}{2}})$ in the reverse order. Generalize the phenomenon.

11428. (W. J. JOHNSTON, M.A.)—From points on a straight line tangents are drawn to a plane curve of the n-th degree. Show that the locus of the mean centre of the points of contact is a unicursal curve of the n-th degree.

11546. (Professor HAUGHTON, F.R.S.)—A globe filled with water, containing gold fish, is so supported on ideal rollers that there is no friction between the globe and the horizontal table on which it stands. What effect is produced by the muscular movements of the fish?

11731. (Professor SCHOUTE.)—Prove that the equation

$$\begin{vmatrix} a_{11} - x, & a_{12}, & \ldots & a_{1n} \\ a_{21}, & a_{22} - x, & \ldots & a_{2n} \\ \ldots & \ldots & \ldots & \ldots \\ a_{n1}, & a_{n2}, & \ldots & a_{nn} - x \end{vmatrix} = 0$$

does not admit real roots differing from ± 1 under the conditions

$$\sum_{j=1}^{j=n} a_{ij}^2 = 0, \quad \sum_{k=1}^{k=n} a_{ik} a_{jk} = 0 \quad (i \neq j)$$

of an orthogonal substitution.

11777. (MORGAN BRIERLEY.)—Given three points A, B, C in the circumference of a circle; find in it another point P, such that $PA^2(PB + PC)$ may be (1) a given quantity, and (2) a maximum.

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IV. (*Oct.* 21.) *Nature of the Class:* various bases of classification in schools: psychological nature of class: difference from group of individuals: minimum number of pupils to form a psychological class unit: the fallacy underlying the phrase "average pupil": sympathy of numbers: disintegration and redintegration of class: coaching versus class teaching: advantages of the class teacher: schematic preparation.

V. (*Oct.* 28.) *Discipline:* various meanings of term: special sense of *control:* basis of discipline: authority: place of consciousness in the maintaining of discipline: personality: fabled power of the eye: George Nidiver: different ideals of class discipline: "talking": relation between discipline and class work: possibility of teaching on the discipline of another: the "discipline master."

VI. (*Nov.* 4.) *Teaching as Presentation:* presentation swallows up all the other steps in the mind of the specially practical teacher: basis on which presentation must be built: relation of teacher's mental content to pupil's mental content: mental focus: the inference point, the inference zone, and the gaping point: turning fact into faculty: the growing point.

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The Educational Times.

The Regulations for Secondary Schools.

The organization of secondary education has now attained a considerable development. Endowed schools have been brought under efficient control, both by regulation of the application of their existing resources and by Government grants to supplement them, and new schools under local management have been instituted. The co-ordination of elementary and secondary education has been carefully studied, and, to judge by the number of pages in the "Regulations" assigned to it, is a subject of paramount interest to the Board of Education.

Much has been done in the way of collecting and circulating information valuable to teachers, beginning with the admirable series of reports drawn up under the auspices of Prof. Sadler, whose retirement from the public service cannot be sufficiently deplored. This work has been continued up to the present time by a number of useful fly-sheets on such subjects as "The Teaching of History," "The Teaching of Geometry and Graphic Algebra," "The Teaching of Latin," and so on. Such monographs make widely known the "newest lights" on which an agreement amongst the best teachers had previously been secured only slowly and imperfectly and confined to a small circle.

On one point, however, the objects generally in the minds of educational reformers have not been perfectly attained. At the end of the last century, private schools, both day and boarding, were playing a very important part in our system of education, and it was hoped that they could be utilized, to the fullest extent, as part of our national educational resources. Whether they could be assisted from public funds has always been a very difficult question, solved nowhere except in some Scandinavian countries. In this country, little or no effort has hitherto been made towards the solution of the problems involved. In the Regulations private day schools are absolutely excluded from grants. In other respects their position has been made more instead of less difficult, and for recognition as efficient schools they are expected to reach, as regards curriculum, staff, and other points, a standard of efficiency scarcely attainable without practically unlimited resources. Their position has always answered to the description:

> Chill penury repressed their noble rage,
> And froze the genial current of their soul.

For some time social and other considerations will often work in favour of well conducted private boarding schools, especially of those whose work is only preparatory; but for private day schools the outlook is very dark. For example, in the matter of curriculum, the requirement of practical elementary science, involving as it does considerable expenditure, is not easy to fulfil; and in girls' schools the demand for mathematics, though easier to meet, is of doubtful utility, both on general grounds and in regard to the wishes of parents. True, it may be avoided, in the case of older girls, by the substitution of instruction in domestic subjects; but the attempt to assimilate entirely the education of boys and girls is a counsel of perfection by no means universally approved, and may in the long run fail to be a satisfactory solution of a much vexed question. It is to be noticed that in the recent list of nearly eight hundred efficient schools recognized by the Board only ten private schools find a place. There exist a considerable number of such schools doing good work in their several localities which do not deserve to be stigmatized as inefficient, for that is the inference that will presumably be drawn from their absence from such a list.

It is time to turn to some details of the regulations which deserve some comment. In the first place, there is happily little or no "religious question" in secondary schools. The regulations on this point—alike as regards the governing bodies, the staff, and the pupils—are excellent. The same cannot be said of the preference given to Latin when two languages besides English are studied. On that point the reasons for the decision, as far as they can be gathered from the fly-sheet on the teaching of Latin, seem to be of a somewhat antiquated character, and may perhaps before long give way to a wider point of view. "Soft options" are no doubt to be deprecated, but it is not impossible to secure the discipline associated with hard studies in some other way. Anyhow, it is undesirable to limit unduly the discretion of teachers. Another point which looks like an encroachment on their liberty is the prohibition of sending into public examinations pupils under fifteen years of age. Surely this

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might be left to the combined wisdom of the parent and the teacher.

In conclusion, it is desirable to point out that the good work already done by the Board needs to be supplemented by increased efforts to promote elasticity, and in particular by the encouragement of private effort whenever this can be done without detriment to real efficiency.

NOTES.

In another column we have the pleasure of printing at length a tolerably plain and stiff letter addressed by representatives of several important associations, educational and scientific, to the Board of Education. The main point is the unfortunate attitude of the Board in their inadequate circular on language teaching. It is not too much to say, as the remonstrants do, that there is now in the schools of this country a "rapid and alarming retrogression" in the study of German. This is a fact to be recognized and to be faced with prompt and vigorous measures of amelioration. It should be superfluous at this time of day to rehearse the value of a knowledge of German in industry and commerce as well as in all branches of study. Latin, no doubt, is immensely valuable, but the conditions of the modern world will not permit it to stand in the way of German with impunity. When we regard the action of the Board in recent circulars on other subjects, we cannot doubt that they will inquire into the particular grievances of their correspondents, and frame a fresh circular displaying a just appreciation of the state and prospects of modern language teaching in the schools.

In his presidential address at the annual meeting of the Association of Teachers in Technical Institutions (November 6), Mr. J. Wilson, M.Sc. (Battersea Polytechnic), after reviewing with satisfaction the progress of the year, proposed some special lines of action for the immediate future—among the rest, the holding of a series of conferences between the representatives of elementary, secondary, and technical teachers to discuss the possibility of reforms in the curricula and methods of work in elementary and secondary schools, from the point of view of the needs of the pupil who later passes on to the technical school. "Specially necessary," he said, "is the conference between the elementary and the technical teacher, as in most cases, if a boy receives any formal education after leaving the primary school, it is to the technical teacher he comes. Needless to say, we wish to disclaim any suggestion of criticism of the elementary teacher: our objection is to the system of work now imposed upon him by a monstrous regiment of faddists." Another point of importance emerges in the higher regions — the relationship of the technical institute to the University college; for "there is clearly visible at the present time, both in London and the provinces, the evil spectre of 'mutilation' masquerading under the guise of 'co-ordination.'" Mr. Wilson refers to "the tendency to restrict the higher scientific and technical work of our institutions." In view of developments—for, "despite its achievements in the past, technical education in England is only just commencing its real work"—it is most important that the right lines should be discovered, and that the different grades should be placed in the most effective relations. "The really hopeful factor" of the situation, says Mr. Wilson, "is the probability of the early establishment of some form of organized effort by the State to achieve the following ends:—(1) elementary education to be more real and less 'bookish,' without diminishing its value as an instrument of culture; (2) the establishment of some system of compulsory attendance for continued education for all between the ages of fourteen and seventeen years; (3) the linking together of the three main grades of education; (4) the co-ordination of the work of the elementary evening continuation and evening technical schools. A system of compulsory attendance at evening or day continuation schools, coupled with the co-ordination of curricula, should provide technical institutions yearly with a large number of trained students well qualified to profit by the courses offered at these institutions."

The *Standard* is doing yeoman's service by its stream of able articles on the higher education, and especially on the facilities for such education in connexion with the University of London. In a recent article Principal Miers pointed out strongly the importance of research in education. "Though the industrial applications gave a new stimulus to research as a recognized part of University education, and although, in the minds of the public, the word may be connected mainly with work which leads to such results, the introduction of research," Dr. Miers points out, "has really effected a far more profound revolution in education. It has meant the introduction of the research spirit." Undoubtedly, research ought to be an indispensable part not only of the work of the teacher, but also of the studies of the scholar. There is no branch of University study that lacks unexplored fields, or fields that require fresh exploration; and there is no form of exercise that will so effectively call forth the powers of the student and impress him with the significance of his work. The practical results in departments whose work is appreciated by business men may gradually lead to a more general belief in the value of similar research in subjects that do not bring out results with money on the face of them. Then one may begin to hope for at least a living-wage endowment in all the Faculties of the University.

The death of Dr. W. T. Harris, late Commissioner of Education in the United States, removes a great educationist and a very remarkable personality. Dr. Harris was perhaps best known in this country through his Annual Reports as Head of the United States Bureau of Education to the Minister of the Interior—volumes of singularly unattractive appearance, but full of valuable information not only about American schools and colleges, but about educational movements throughout the civilized world. Leaving Yale without a degree, Harris started as a teacher of shorthand at St. Louis. Presently he obtained a place on the staff of the St. Louis "common schools," and steadily rose step by step to the post of Superintendent (1867) with control of the whole of the popular education of the

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city. Here he soon gained a national reputation—partly by his official reports, mainly by the reforms he advocated and initiated. He is said to have started the first kindergarten in America; and he did much to define the separate functions of the different classes and grades of schools. He resigned the post of Superintendent in 1880 owing to bad health. For some years he worked at philosophical studies, in which he had already taken an active interest; and it was in 1889 that President Harrison appointed him Commissioner. Prof. Findlay has described his bureau as "a laboratory for scientific research in the field of comparative education." Dr. Harris retired in 1906. He received doctorates from several Universities. The Trustees of the Carnegie Foundation placed his name first on their roll of honour, and assigned him the highest pension permissible under their rules. "There is naturally," they wrote, "no other name connected with American education which is so identified with the progress of the last thirty years as yours."

SUMMARY OF THE MONTH.

In reply to a communication from the National Council of Evangelical Free Churches, the Prime Minister wrote:

The fate of the Government's Education Bills has been a great disappointment not only to the Free Church of England and Wales, but also to his Majesty's Ministers. The present House of Commons and the Government have spared no time or labour in the effort to legislate on this subject. You need not be reminded that the Education Bill of 1906 was made the principal measure of the year, or of our renewed endeavours to settle the question in 1907 and 1908. Justice would have been done to the Nonconformists, and the popular control of all the public elementary schools of England and Wales would have been an accomplished fact, but for the action of the House of Lords. It is due to no fault of ours that those for whom you speak are disappointed and labour under the sense of a real and serious grievance, and for our part I can say that if no opportunity arises for dealing effectively with the subject in this parliament, we cannot in the next, if we are returned to power, allow the present injustices and the limitations or absence of popular control to continue to deface our educational system.

The President of the Board of Education received a deputation from the recent Rural Education Conference, at which certain resolutions were passed urging the desirability of giving greater administrative encouragement and greater financial assistance by way of grants towards the cost of instruction in "special subjects." Mr. Runciman said he took it that the object of the Rural Education Conference could be summed up shortly as follows: They wished the education of children in the public elementary schools to be made more practical and less bookish; and they also desired that the education should be adapted to the requirements in which the schools for the children were situated. With these objects he was in full sympathy. The question of grants was by no means an easy one. It was very complicated, and it was not entirely in the hands of the Board. But they had attempted to increase and to improve the grants during the last few years. As far as had been possible, they had attempted to encourage the very experiments which the deputation had advocated. The extent to which new work was being undertaken might very well be measured by a large increase in gardening classes. There was one great departure which they had taken in conjunction with the Board of Agriculture: they had arranged a rural education conference in respect of the great agricultural necessities in this country.

A return just issued by the Board of Education gives the following information regarding training college students:—(1) Number of students who satisfactorily completed their course of training in the year ending July 31, 1908—male, 1278; female, 3106—total, 4384. (2) Number of students included under Head 1 who are known or believed to have obtained employment by July 1, 1909, in schools satisfying the terms of the students' undertaking—male, 1221; female, 2848—total, 4069. (3) Number of students included under Head 1 who are known or believed not to have obtained employment by July 1, 1909, in schools satisfying the terms of the students' undertaking—male, 45; female, 214—total, 259.* (4) Number of students included under Head 1 as to whom no information is available—male, 12; female, 44—total, 56.† [* This number includes, besides one student who died during the year, a certain number of students trained in training colleges connected with Universities who returned to the University for further study and did not seek immediate employment. † The majority of these students were trained either at the London (New Cross) Day Training College, or at the Southampton Day Training College.]

A scheme has been organized by the Public Schools League for Imperial Land Settlement in connexion with the Head Masters' Conference. According to a memorandum just issued, the emigration sub-committee of the Conference undertakes to advise and assist public-school boys, who, after leaving school, decide, with the consent of parents or guardians, to seek a career in the Overseas Dominions. The plan at present is to secure for such boys a period of not less than a year's training on a farm in one of the Oversea States, to be followed by attendance at a first-rate agricultural college. No premiums are paid. Inquiries should be addressed to Mr. W. A. Evans, 12 King's Bench Walk, Temple, E.C.

The Secretary to the N.U.T. writes:—"More than the usual local interest attaches to the result of the Council Election at Bridlington. In the early part of this year Mr. Grimshaw, one of the assistant masters in the Council's service, made a speech at a teachers' meeting at which some of the members took offence. He was called before the Committee, and, on declining to withdraw statements which he considered to be true, was dismissed. He then became a candidate for the Council, and the election was fought mainly on the question of the right of a teacher to a fair hearing. There were six vacancies on the Council, and five of these have been secured by supporters of the principle, Mr. Grimshaw himself being elected for the Ward in which his school is situated."

At the annual prize-giving at the Mathematical School, Rochester, the head master (Mr. Charles Bird, B.A.) said he was not of those who went "pot-hunting," and did not believe in pitting one school against another and trying to beat the record. The Earl of Darnley, in distributing the prizes, said that it would be a great mistake to regard the boys who had no awards to take as "failures." The really important thing for every individual in the schools all over the country was that we should be able to raise a race of "triers." He congratulated the boys on belonging to a school that had a history of more than two hundred years behind it. There was no more legitimate pride than to belong to a school which had done work generation after generation as that school had done. They should never drop their connexion with the old school, however far their life's work might take them. They should have their school papers bound and keep them. Some of his own most prized possessions were volumes of the Eton School paper. During the last year he was at Eton he was one of the two editors of that paper. That great statesman Mr. Gladstone was an old member of the school, and he had been making a public speech somewhere in which they thought he had run down the old school. They put their editorial heads together and called in their strongest leader writer, the present Lord Curzon of Kedleston, and told him to write a good stiff article so as to bring Mr. Gladstone to his senses. So successfully did their leader writer do his work that Mr. Gladstone sent an autograph letter explaining away his speech in his very best style. He had still got that letter. Referring to the school sports, Lord Darnley said that physical training and exercises were not inconsistent with high intellectual attainments.

Speaking at the distribution of prizes at the Halifax Technical College, Sir Swire Smith said some people threw cold water on technical instruction, alleging that it did not train the mind to exercise in the highest possible degree its best faculties. But was not the aim of technical education to teach the student the principles underlying the work in which he was engaged, to teach him what to learn, and to implant in him

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the desire for more knowledge? Technical education was like Latin and Greek, in that it was a good exercise, but it was unlike Latin and Greek because it would bring something in. Perhaps one of the most serious questions we, as a nation, had to face was one which he congratulated Halifax upon facing with such spirit and success—the wastage of educational effort which occurred after boys and girls left school. Everywhere we were hearing of unemployment in our country. He had known unemployment to be more general than it was now, although perhaps it was never so much advertised as it was to-day. You could not remove unemployment by a magician's wand. Parliament could do very little indeed in that direction. If we could establish classes in thrift, so that we could have that principle thoroughly engrafted in the minds of our people, we should have a much happier country than we had. A danger was that so many of our young people had never learned to work. The great pity was that most of the unemployed had never learned a trade. At the first pinch they drifted into unemployment. In many trades the apprenticeship system was practically dead, and therefore we should have to adapt education to the changed needs. We should have to train the whole boy while he was at school. We wanted artisans, and we were training clerks, and while this immense economical change was going on we were taking no notice of it. In nearly all our trades to-day there was a tremendous subdivision of labour, and that subdivision had come to stay, but it was taking the life and soul out of many of our people. In Halifax they were trying to deal with these problems by means of that college. They provided means whereby a boy in a particular shop where he learned one part of his trade might come to that school and learn the other part. Technical instruction was good not only for the student, but for the employer and the country.

At the Annual Meeting of the Secondary Education Association of Scotland, held in the University of Edinburgh, Dr. Marshall, the former Rector of the Royal High School, Edinburgh, delivered an address on "The Universities and the Secondary Schools." He said that towards all the modern changes his attitude was simply this: that the efforts and expenditure by which in Scotland since 1872 it had been quite honestly sought to improve education, had been largely neutralized or stultified by this one fatal defect—that in their very nature they had tended more and more to derogate from the liberty and independence of the teacher and to a corresponding degree in each case had rendered rarer and more difficult the production, through the influence of character and originality, of the old manly and enterprising and original type of scholar. Apparatus had complicated and multiplied, but the old humorous freedom had tended to disappear, and with the old freedom the manufacture of freemen. His one main hope for freedom lay in the freedom still largely untouched of the Universities of Scotland. The Universities were resuming their independence of each other in the conditions of admission, and they were busy now in reconsidering the methods and principles which were to determine their selection of bursars. That way hope and redemption lay. And in the leaving certificate arrangements there lay a second hope of freedom; and, if the new idea was finally worked out on the lines sketched by Mr. Struthers, it would restore in large part much of the old freedom of teaching. If they could only see organized and systematic recognition of the possibilities of that new scheme on the part of the Burgh and County Committees, with their extended powers in the way of the conferring of bursaries, he could imagine a new and splendid era of freedom for teachers. In co-operation with the inspector, each head master would be privileged to submit the names of his promising pupils who were desirous of going on to the University, and who required assistance to that end for the consideration of the Burgh or County Committee.

The Rev. Dr. James John Hornby, Provost of Eton College, died at the age of eighty-three. The third son of Admiral Sir Phipps Hornby, he had a distinguished career at Oxford, and rowed in the 'Varsity Eight in 1849 and 1851. He was Head Master of Eton from 1868 to 1884, when he was appointed Provost.

Dr. Frederick Fuller, Emeritus Professor of Mathematics in the University of Aberdeen, died at Surbiton at the age of ninety. He was Fourth Wrangler in 1842, and was Professor at Aberdeen from 1851 to 1878. He was one of the University Commissioners under the Universities Act of 1889. He gave a great impulse to mathematical study in the University and was extremely popular with the students.

UNIVERSITIES AND COLLEGES.

(From our own Correspondent.)

Cambridge.

The list of Special Examinations, as foreshadowed in these notes, is practically certain to receive an addition in the shape of a Special in military subjects. The schedule follows the lines of the examination which is the regular test for the admission of University candidates to the Regular Army, so that now the future officer can devote the major portion of his University career to a technical and yet scientific course of study likely to prove of advantage, directly and indirectly, in his future career. Much of the success of this military development is due to the organizing skill and tact of Col. H. J. Edwards, who commands the C.U.O.T.C., and the whole-hearted work of Col. Dyke, the Director of Military Studies.

The official report as to the number of matriculations for 1909 gives 1,198 as the total for the civil year, as against 1,173 for the corresponding period of 1908. When will college Authorities begin to consider that these details are for the Chamber and not for the market place? The colleges thrive on numbers, but how about the unfed crowd?

The annual assessment of the Colleges reveals the fact that the taxable income amounts to £259,500, of which the University claims £30,275 as its due. Then we have to consider the trust funds, which are not included in this sum, and wonder whether the University system is incapable of some slight amendment.

Sir Ernest Shackleton's lecture was delivered on October 29—too late for record in last month's notes. A belated appreciation, but a deserved one, must be given. The undergraduate may be all his detractors say, but he can recognize merit and a man. This time he had a full opportunity. Nansen was a popular hero here, but Shackleton was accorded a hushed silence and quickly checked applause, which spoke surely of the hold which a real man could gain over those who trusted to their instincts and knew they were right.

The election of Mr. J. Stanley Gardiner to the vacant Chair of Zoology was, to a certain extent, anticipated by popular rumour. Mr. Gardiner has wandered among savages in wild lands and has met wilder men in his proctorial ramblings nearer home; he has come out of it all with credit, and doubtless will not let the extinguisher of office descend upon the flame of his studies.—Dr. Nuttall was re-elected to the Quick Chair of Biology: this was inevitable.

The *Reporter* has been full of wrangles as to the ceremonies of creation and inauguration of graduates. How few know anything of these hollow mockeries, and how very few care!

The memorial to the late Prof. Maitland is to take the form of a bronze bust to be placed in the Squire Law Library, while the unexpended balance is to be utilized for founding research scholarships in that department of medieval legal learning which Maitland made his own.

To turn to outdoor matters. Our Rugby football team, like the curate's egg, is regarded as good in parts. The forwards are exceptionally good, the halves are good, and the full back is up to International form; the three-quarter line is the outstanding weakness, and has suffered severely from accidental causes. But, if Scholfield maintains his present form and if Pyman and Beecroft are able to get sound and remain so, the match against Oxford will at any rate be a good one to watch.

Our prospects on the river are fairly bright: the number of reasonably good men worth trying for a place in the trial Eights is larger than in any previous year. Harmony prevails in high places, and doubtless will continue till Putney is reached.

The Hawks Club deserve much credit for their enterprise in giving one of their delightful balls to enliven the monotony of the Michaelmas Term. Dancing was kept up till 4.30. Worms's band provided the music. The supper was of the usual Cambridge standard, and the whole affair went with *élan* to the very end.

As a sequel to the hoax perpetrated some time ago at Caius, the Emmanuel men had their revenge the other night. At an inter-college debate a well known M.P. was announced to speak, and he duly kept his appointment. When it was all over, the truth leaked out that Mr. Clarkson was responsible for the manu-

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facture of an M.P. out of such humble materials as stage make-up and an undergraduate with histrionic talent.

Things are abnormally quiet, but the eggs of the goose take longer to hatch than those of the domestic fowl. Reform is in the air.

London.

Much exception (says the *Times*) is taken, among graduates of London University, to the fact that the Royal Commission on the University of London is sitting *in camera*. Lord Selborne's Commission of 1888 on a teaching University for London took evidence in public, and, in view of the fact that the reference to the Commission now sitting is not only wider, but includes an inquiry into the existing organization and working of the University of London, which concerns numerous interests, it is felt that it is vital to the University itself that the Commission should take evidence in public.

The Senate has decided to take part in the Modern University Congress which it is proposed to hold in 1910, and the Vice-Chancellor and the Principal have been appointed to represent the University on the Executive Committee which is being formed for the purpose.

The Medical School of King's College Hospital, which was, by the King's College, London (Transfer) Act, separated from King's College, has been admitted as an independent body to the status of a school of the University in the Faculty of Medicine.

Dr. Charles Graham, D.Sc., formerly Professor of Chemical Technology in University College, London, died at Hastings. Dr. Graham was a Vice-President of the Institute of Chemistry in the years 1882–4, and served on the Council for several years. After graduating as Doctor of Science in London, he studied applied chemistry in Germany. His Cantor lectures at the Society of Arts aroused a large amount of interest in the brewing world, and he was regarded as a pioneer of certain advances in scientific brewing. Dr. Graham was associated early in life with the Volunteer movement in the Berwick district. He was 74 years of age.

Tutorial Classes for Workers.

A conference on the subject of the formation of tutorial classes in industrial centres was held at Oxford, under the chairmanship of the Vice-Chancellor (Dr. T. Herbert Warren). Representatives were present from all the Universities in England, all but two of the University colleges, of the Workers' Educational Association, and various similar bodies. The chief resolutions adopted were as follows:—

That this Conference desires the extension of the tutorial class system, as far as is practicable.

That it is desirable to form an Advisory Committee representing the Universities and University colleges concerned, the Workers' Educational Association, and other interests involved.

That the secretaries be asked to communicate the foregoing resolution to the Universities and University colleges of England and Wales and to the Workers' Educational Association, and to invite them, if they approve of the foregoing resolution, to appoint two representatives each to such Advisory Committee, in the first instance for one year; and that, when a joint committee, consisting of University representatives and representatives of labour organizations, has been formed in connexion with any University carrying on tutorial classes, such joint committee shall be invited to appoint one representative of themselves, who must be a Labour representative.

Irish.

Irish Roman Catholic opinion (writes the Dublin correspondent of the *Times*) appears to be satisfied with the new staffs of the National University and of University College, Dublin. Irish Protestant opinion, perhaps from motives of delicacy, has not expressed itself at all. An impartial judgment would probably be that some of the appointments announced to-day are admirable, that the majority are respectable, and that in some others the qualifications which satisfied the Commissioners, though possibly excellent, are not before the public. The appointment of Dr. Douglas Hyde and Mr. John MacNeill, the president and vice-president of the Gaelic League, to important chairs in Irish was not unexpected. Its effect on the Gaelic League's threatened campaign against the University is now awaited with curiosity. I understand that the appointment of Mr. Swift MacNeill and Mr. T. M. Kettle to the chairs of Constitutional Law and National Economics respectively will not necessarily interfere with their duties as members of Parliament.

THE HISTORY OF EDUCATION AS A PROFESSIONAL STUDY.

At the Evening meeting of the members of the College of Preceptors on Wednesday, November 17, E. A. Butler, Esq., in the chair, Prof. J. W. Adamson read a paper on the above subject. He said:—

It is advisable to explain at the outset that the word "education" is here used as a convenient, even if too comprehensive a name for the task of the schoolmaster. One need scarcely add that "the history of education," if otherwise interpreted, would prove a very intractable subject. Accepting the narrower interpretation of the phrase, this paper is an attempt to answer the question: Of what use to the practising teacher is the historical study of education?

The plea has been urged that the history of education is part of the history of the development of culture in general, and shares with it the interest, the intellectual stimulus, the extension of the mental horizon, and the enlargement of sympathy which a study of the history of culture is capable of conferring on those who can pursue it with appreciation. These, however, are quite general arguments; persuasive as they may prove when addressed to educated persons indiscriminately, they are hardly likely to strike a purely professional audience as very convincing. The individual schoolmaster may reply that the advantages ascribed can be secured by other studies which he for his part greatly prefers. To justify the claim of the history of education to a place amongst professional studies, it is necessary to show that professional profit may be acquired from it which cannot be got so easily or got at all from any other study.

Most professional men need to be on their guard against the insidious dangers of routine and the prepossessions of their art; the schoolmaster is most certainly not excused from taking care in this respect. In his case it is especially desirable that he should retain the capacity of criticizing the daily task and of perceiving that "open questions" still exist. Of all professional men, he seems obliged to retain that wholesome scepticism which does not paralyse action, but renders it free, prompt to the occasion, and effective.

Education is relative to Social Surroundings.

But the critical temper and the sceptical attitude are hard to preserve when it is forgotten that most of the aims and all the instruments and processes of education share the common human disability of being merely relative. One or two fundamentals excepted, there is no absolute, all-comprehensive object proposed for the schoolmaster's attainment. Still less is there such a thing as the Absolute Curriculum. Educational aims have changed from age to age, and studies and methods have varied in similar fashion. Here the history of education becomes professionally helpful. While the relative character of his work is likely to be forgotten by one who is for ever absorbed in the attempt to satisfy the requirements of the present, it is the most obvious thing to the student of the past.

If it be true that there is no absolute curriculum, does it not follow that the teacher should strive to keep his own mind elastic, and to allow a free play of thought around that curriculum in which it is his daily occupation to give instruction? This would appear all the more needful since the character of his task and the circumstances amidst which it is done only too readily tempt him into routine and the acceptance of standards purely conventional.

The student of the history of education realizes, as no one else can, that the curriculum of the present day is of very recent growth; he reflects that most of the things now taught in schools are mere upstarts of the hour when compared with the long life of the school itself as an institution. He will go further, and recognize that education has been possible in the absence of schools and of tutors, as these terms are commonly understood.

Aims, curricula, methods are all relative to the stage of civilization reached by the society which erects or employs them; they are reflections of life outside the school as it is lived at the moment, or, more usually, they reflect the life of the immediate past. Failure to realize this truth brings about misunderstanding of the education given during any one period, our own not excepted. The failure to connect educational practice with the life of the time—the failure, that is, to study education historically—causes grave misrepresentation, for example, of the purposes and achievements of the educators of the sixteenth century.

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Mr. Quick was alive to the danger of using labels as if they were interchangeable with persons; yet he ventured to classify the sixteenth-century teachers severally as "stylists," "scholars," and "verbal realists." This classification, based on the attitude of the teacher towards the classical literatures, misses the main point, which is, why employ the classical languages, and more especially Latin, as educational instruments at all? Mr. Quick's picture of the schoolmasters of that day shows us a set of pedants, devoted to the thought and life of another age than their own, and indifferent to the life of their contemporaries. A penetrating critic like Montaigne, feeling by anticipation the change which was to come over European society in general, also presents us with a similar picture of a fatuous set of persons engaged upon a task without meaning. But it seems to me that both Montaigne and Mr. Quick are unjust to the men who wrought so laboriously in sixteenth-century schoolrooms. Neither of them is fair to the concrete usefulness in that day of the power to write sound Latin after a Ciceronian model. A lad who had acquired this art had surmounted the first great obstacle to advance in public life: many a poor but capable youth found his way into the public service and to eminence in the State through ability to write an official letter and conduct affairs in the universal language of administrators. The schoolmasters who prepared boys to exercise this accomplishment were doing a very real service to the boys and to their parents, as long as the circumstances of the time made the Latin language a broad gateway to promotion. The usefulness of their work is a very good set-off to the charge of pedantry and obscurantism brought either by a contemporary looking beyond his age or by a man of to-day momentarily at least forgetful of the past.

The Attitude towards Innovations.

The schoolmaster's critics, however, are not the only men who need to view the school historically. Where the historical factor is ignored, whether by teacher or educational administrator, there is something more than a tendency to look askance at all innovation just because it is new, and to cling to the obsolete merely because it is familiar. How else are we to explain, for example, the widespread adherence to the syllabic plan of teaching reading, which is always discredited when spoken of, yet probably still serves for the instruction of many thousands of those children who are taught to read English more or less systematically? Employed originally to teach the phonetically spelled Latin, it was transferred in due course without question, and as a hoary tradition, to the teaching of modern languages, even in cases where these were almost destitute of a phonetic notation. Similarly, history and tradition account for the attempts which even now continue to be made to instruct children in processes and in modes of skill through descriptions only, whether conveyed in books or by means of oral lessons.

Curricula and Methods are Developments.

There is no absolute curriculum; not even our own attains that dignity. It is therefore a very practical thing to refer existing school courses to the life around us. But even in the most bureau-ridden of European lands, the curriculum is a growth, not a creation *ex nihilo*. It is a development which, to be duly appreciated in its relative character, must be regarded historically.

This is also true of the processes by which it is sought to turn curricula into instruments of education. One may illustrate by referring to the place occupied by the verbal memory in school work at different periods. When all books were few and hard to come by, it was a very natural device to require pupils to learn very many things by rote. The practice which had its origin in utility passed into a tradition, and was a settled usage long after the time when books, and school books amongst them, had become numerous and readily accessible. It was then no longer possible to explain the practice as a supremely useful one, but it was defended as a sovereign means of "training the memory," and on that ground tasks quite unnecessary and often harmful were imposed on schoolboys. In due course, the swing of the pendulum came. A multitude of cheap books and a very considerable extension of the hours during which a man could read, made it evident that much of the learning by heart so insistently practised in schools was needless. Here and there the onslaughts of Montaigne and Rousseau were remembered, and a legitimate, valuable, and necessary exercise fell into disrepute. The latest critics forgot the convenience, the saving of time, the readiness and alertness consequent upon a good verbal memory, to say nothing of the pleasure such a memory may confer upon its possessor when judiciously exercised and employed. Forgetfulness became easier with alterations in curriculum which reduced or ousted the old linguistic course of study.

The series of changes here outlined is typical in the history of education. Studies and methods which begin as necessary adaptations to circumstances crystallize later into habits; and then they are urged or excused on quite other grounds. Very frequently these grounds are merely fallacious generalizations which are used to resist innovation and reform, to excuse the survival of practices which have lost very much of their meaning and value, and to insist upon the educational worth of things which are to-day chiefly mischievous.

History gives a Standard of Value.

The historical student is in possession of a means of correcting values which he can apply to these questions of curriculum, of method, and of educational administration. He becomes aware of the close connexion between the best work done in the schoolroom and the daily life led beyond its bounds. He recognizes the obsolete, notwithstanding the fine phrases and illegitimate assumptions which are used to make it appear other than it is. His appreciation of the growth and development of educational instruments and processes teaches him to look ahead, while it preserves him from clap-trap.

It is sometimes objected that the history of education is no more a professional study for the schoolmaster than is the history of medicine for the medical man. The analogy, which is not a good one, seems to spring from a mind in search of the non-existent Absolute Curriculum. There is a better analogy between Education and Law, and legal history certainly is a professional study of high rank. Be that as it may, a medical man is helped by knowing what were the specific problems of his predecessors, even though he is not disposed to accept the solutions which they propounded.

The Conservatism of the Schools.

It was said above that the aims and usages of the school reflect the life of the *immediate* past. It has been a commonplace of educational reformers in all ages that the schools which they knew were "behind the times." The fact may be admitted without branding the schools as useless or inefficient. The explanation seems to be that the school is or tends to be a highly conservative institution just because it deals with one of the fundamental processes of human life, which cannot lightly be hazarded amidst experiments of unknown issue. If it be the long-established practice, let us say, of the schools of Brobdingnag to teach the Laputan language, there will, no doubt, grow up in time a general assent in that disagreeably named region that it is, after all, unnecessary, wasteful, and pedantic to retain the language of Laputa in the curriculum. But one must not on that account expect the individual Brobdingnagian to withdraw his son from instruction in Laputan. He will reflect that he himself and all his circle learned that tongue in boyhood, and that his son is, in due course, to take his place in a society of persons who have all learned Laputan. He will, therefore, decide that *his* boy, at all events, must learn Laputan, though for all other boys—or, at least, for very many of them—the instruction is "wasteful," "unnecessary," and the rest.

The schoolmaster and the school instinctively adopt this attitude of the parent, and there is much to be said for all of them. But, when the attitude is assumed independently by the schoolmaster, there are inconveniences and worse. "Being amongst friends," it may be said that the first place amongst real, effective reformers of education cannot, on the whole, be assigned to schoolmasters. Schoolmistresses may, perhaps, make good a claim to stand in greater numbers amidst those minor reformers who have improved our methods. But, as a general statement admitting few exceptions, the great reformers have not been professional teachers, and some of the notable exceptions were reformers first and schoolmasters in consequence. Too often the teacher by profession has stood in the way of reform.

The study of the history of education is one calculated to change this undesirable condition of things. It puts the schoolmaster on his guard against some special weaknesses which beset his profession. It encourages the open mind which should mark the teacher, if it distinguishes educated persons at all. The past of his profession, its aims, instruments, failures, and achievements, when placed in their historical setting, should help the schoolmaster to see how matters are shaping in his own day. A

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knowledge of the manner of development of education is the best guarantee that its possessor will respond readily and intelligently to those outside forces which are moulding the future.

The True "History of Education."

This is no plea for the supremacy of the history of education amongst professional studies; that is a position reserved for the scientific study of education, which treats the phenomena of the actual school of to-day in the spirit and by the methods of the investigator and experimenter. But it is held that history deserves an honoured place amongst the many auxiliaries to which the scientific student must resort. After all, history is a narrative of experience, and it is upon experience that the scientific method is based.

Bearing in mind the character of much which passes under the name of "History of Education," it may be objected that educational experience—that is, the concrete facts of the schoolroom and the prescriptions of educational administrators—appear therein all too rarely. The objection is a very valid one; the history of educational opinion is not coincident with the history of education, and it is on behalf of the latter that the present plea is made.

The history of opinion concerning education, the story of suggested innovations which never got any visibly further than the printed page, has quite a different function from that which belongs to the history of education. It is interesting and stimulating to read the views which Mulcaster set forth in the "Positions"; but these, unhappily, form no part of the history of our profession. We are much closer in touch with that when we scan Cordier's "Colloquia Scholastica," or any other well-thumbed school book of Mulcaster's day. Even the biographies of great teachers, and much of the work of great thinkers on education, are rather *mémoires pour servir* with reference to educational history than substantive parts of the history itself. This, of course, is not a denial of their intrinsic worth, nor does it mean that they are valueless for the schoolmaster.

The history of education is the history of educational practice and of theory in relation to practice: it sets forth the aims proposed to the schools and the means by which the schools sought to attain them, the circumstances which favoured and those which hindered the search. It is, however, not a mere catalogue of particulars or a string of annals, though it includes these. Such things call for interpretation, and their meaning is to be looked for in their relation to the life of the time and to the intellectual forces which moulded it. It is a corrective to the purely scientific study of pedagogy, which is sometimes short-sighted. It is a solvent of prejudice and an enemy of bare routine.

Take, as an illustration, the prejudice against "useful studies." It is no prejudice, but a sound principle, which makes us distrust unintelligent "short cuts" that lead merely to the pretence of knowledge or to the acquirement of mere tricks. But there is in many minds a feeling of suspicion, or of downright hostility, to the employment, as an instrument of education, of any study which can be shown to have a direct use in daily life. Those who cherish the feeling will deny any sort of place in education to considerations which are commercial or industrial; it is no part of the educator's business, they maintain, to increase the "economic value" of the pupil. Nevertheless, it is matter of history that this very aim has been a most powerful agent in educational reform. The idea of public instruction owes much to it, not only as leading to the establishment of technical and trade schools, but also in the conception of what constitutes primary education. It is now a wellnigh universal belief that the "three R's" form the elementary stage of all instruction, from the University downwards. But it can be shown that this belief is a comparatively modern one, which owes its existence very largely to the specific demands of the shop and the factory. Even Latin and Greek owe their position in the curriculum historically to their usefulness in definite occupations, although the fact does not explain their presence there to-day when other reasons may be legitimately given for their retention.

Classical scholars who recall the names of Florence and of Venice should be the last to decry the services of industry and of commerce to education, and the power which they have often beneficently exercised on its behalf.

Is there no place for the statement of educational opinion in the history of education? Certainly there is, if the opinion is of the operative sort which has got itself incorporated in practice. In this sense, we are reading educational history when we study Rousseau's "Émile" or Comenius's "Great Didactic" or any of the tracts and text-books in which Erasmus or Sturm embodied his ideas on the upbringing of boys and girls. But even these cannot be profitably studied if they are looked upon as literary Melchizedeks, without parents or posterity. In other words, we need to bear in mind, when reading them, the circumstances out of which they grew and the effects upon educational theory or practice which they wrought. They should be studied historically and not as isolated monuments whose interest is confined within their own boundary lines.

Historical Research.

If the phrase "the history of education" has been correctly interpreted, it seems to follow that a great many pages in our text-books are blank; and the reason for this would appear to be that too many of our so-called "Histories of Education" have been written under literary inspiration rather than as the outcome of historical research. English educational books which can be assigned to the latter origin are few, but these are good. The administrative side of English scholastic history has been presented to us by Mr. Leach in a number of monographs, as well as in his larger work on "English Schools at the Reformation"; he and others have told us much concerning the past of individual schools in the various volumes of the "Victoria County Histories." The connexion between the State and the schools has been set forth historically by Mr. de Montmorency in his "State Intervention in English Education."

Of even greater professional interest, since they deal with the actual everyday work of the classroom in the past, are Prof. Foster Watson's "English Grammar Schools to 1660" and "The Beginnings of the Teaching of Modern Subjects in England." There is also Dr. Sandys' "History of Classical Scholarship," whose three volumes follow their special topic from the sixth century down to our own time; though its scope far exceeds that of the schoolroom, much that belongs to our subject may be gleaned from its earlier chapters more especially. The same may be said with reference to Dr. Rashdall's "The Universities of Europe in the Middle Ages." We have school and college histories in abundance, but too many of these begin well, only to become mere biography, anecdote and ana, owing to the absence of sustained research into the past of the institution as a whole.

Work needing to be done.

The truth is that a great deal of "spade-work" must be done before we can possess a satisfactory history of English education, and some schoolmasters and schoolmistresses engaged in the service of old foundations have extraordinary opportunities for doing such work well. There must exist a considerable store of material lying forgotton or unheeded in minute-books, school accounts and the like, which are in the charge of schoolmasters or are easily accessible to them. In 1727 there were 132 charity schools in London educating above five thousand boys and girls. Many of these schools still exist, usually in association with the parish churches. Their history has a direct bearing upon the development of popular education in the metropolis and in the country generally, and their endowed funds sometimes become the object of regard in the eyes of impecunious authorities even to-day. There was a great decline in the usefulness of these charity schools during the eighteenth century, for which there seems to be no good explanation forthcoming. The explanation cannot but be profitable knowledge for all who are now concerned in public elementary education, and some of it, at least, is in all probability in the places indicated. Yet, so far as I know, only two of these surviving London schools have "got into print"—namely, St. Anne's and St. Margaret's, both in Westminster, Miss Day writing of the latter in "An Old Westminster Foundation."

The number of German monographs of this kind is very great. It is the custom in Germany and in Switzerland for many secondary schools to issue an annual report which always contains one or more articles, contributed by members of the staff, and appealing to a wider public than that immediately concerned in the names of pupils, their distribution into classes, the studies they follow, and the masters who instruct them. These articles are sometimes independent contributions to research, scientific, literary, historical. Many of them present the history of the school itself at some particular period, the school and city archives being used as authorities. Moreover, the German States and cities, and the religious communities, have permitted

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the publication, or have themselves published their school ordinances and records.

In this way, much material of the highest value for the purpose has been worked over and partially digested. When this in turn has been investigated by such a mind as that of the late Friedrich Paulsen, the outcome is so fine a book as his "History of Higher Instruction in the German Schools and Universities from the Middle Ages to the Present Day."

The English Paulsen has not yet appeared, and that is an additional reason why English teachers should study the history of education. Some at least might make contributions to the common stock, all are directly interested in its augmentation, and all would benefit by sharing its contents.

The CHAIRMAN thought it was, perhaps, unfortunate that the subject had not been treated from the point of view of the intending teacher, because it was during the period of training that the necessary time and opportunities for such a study were available. One would readily admit the advantages of this study; but teachers already complained that there was very little time even for work that must be done, and, if they had to take up the study of another strictly educational subject bearing upon the same matter which occupied their attention during working hours, their minds would become jaded. Opportunity was needed for a change of occupation and a difference in the kind of study if profitable work was to be done during the hours of teaching. The lecturer had said that schoolmasters, on the whole, stood rather in the way of progress. There might be some truth in this; but, when a number of new theories were put forward by those not actually engaged in teaching, it was possible that the practical teacher might see difficulties in the way of introducing these new ideas which did not appear to the theorist. This might account for the conservative attitude of some schoolmasters. With regard to the question of utility, it was difficult to realize the exact measure of utility in any subject. It was quite conceivable that a subject of study might at one time appear absolutely devoid of utility and might afterwards prove to be of supreme importance. He would instance the case of the elasticity of wires, the study of which afterwards proved of so much use in the measurement of electricity. The main point was that every subject of the curriculum should have some bearing on practical life and should aim at rendering the pupil able to take his place as an honourable citizen of his country. Everything tending in that direction should find a proper place in the school curriculum. Utility might also be regarded from the point of view of breadwinning; but, after all, man did not live by bread alone and they had to equip their pupils for more than this. They must be regarded as human beings with powers of intellect, and, as a matter of their own private enjoyment, it was desirable that those powers should be trained even though it might not affect their ability to earn so much a year. It would be right to teach reading, for instance, merely for the delight to be derived from reading, even if it were not a necessary preliminary to success in daily life. There was no reason why they should not have in the curriculum some subjects which were useful for the intellectual pleasure which they afforded, useful as a set-off against the strain of everyday life, and to keep one up to the mark physically and intellectually. He heartily concurred with the lecturer that there was no such thing as an absolute curriculum. It must depend partly upon local circumstances, and no definite lines could be laid down. The lecturer had advocated that the teacher should cultivate a critical mind with regard to the various subjects he was teaching. He thought, however, that at the present time the teacher ran a little risk of becoming too critical and having his energies paralysed owing to the number of new subjects and methods which were continually being introduced.

Mr. BEVAN thought that, unless teachers took up the subject during their period of training, they would hardly take it up at all. Unfortunately, many persons gave up study altogether after they left college, and did not add much afterwards to their original stock-in-trade. Furthermore, their practice in school was largely determined for them by others, and they were inspected and sub-inspected by so many departments that they were in danger of losing all originality and power of study themselves and of destroying the seeds of it in their pupils. In country and town schools alike the lack of initiative was evidenced. Farmers could get no young hands to take up the technical work connected with the farm, and the system of apprenticeship had broken down in our towns, partly owing to the restrictive tactics of trade unions, but partly owing also to unintelligent teaching in school. Doubtless the evolutionary theory applied in teaching as well as in other departments of action; and the lecturer had touched upon two illustrations—viz., the necessity in earlier times (owing to the scarcity and dearness of books) for committing many things to memory, and also the practical use of Latin to the man of affairs in the sixteenth and seventeenth centuries. Apart from the latter cause, it was then that Britain was again learning to take a deep interest in things outside herself. The Crusades had had this effect in the eleventh and twelfth centuries, the Hundred Years' War with France at a later period; but, after that, civil broils and the Wars of the Roses had concentrated attention at home. Then came the sack of Constantinople in 1453, the dispersion of scholars, the Renascence, the Reformation—all leading to the reviving of national interest in the classical languages. It was true, however, that the effect mentioned by the lecturer was a particular instance and result.

Mr. BUTT thought that it was during actual practical work that a knowledge of the history of education was most useful, and he therefore sympathized with the desire of the lecturer to confine this historical study to those who had passed through their course of training. A mere biographical study of the lives of ancient schoolmasters did not give much practical help; but, if one could trace the influence of a particular curriculum on the history of its period, the study of the lives of these ancient writers would be much more valuable.

Mr. KING said that his own study of the history of education had been from the biographical point of view, and not from the wider aspect set forth by the lecturer. He thought there would be great difficulty in the production of such works as the lecturer had suggested; but, if University students and readers of history could be persuaded to organize and work with schoolmasters in various districts in order to accumulate the mass of information which would be necessary, the results would be of great value to teachers who had passed through their course of training.

Mr. KITCHENER agreed that the study of the history of education gave the teacher a wider outlook and was of great value in preventing mistakes in practice, more especially when experimenting with new methods. Unfortunately, books on the subject were few. The production of others would no doubt induce more teachers to read, but, so far at least as assistants were concerned, very little time was available for this study.

Prof. ADAMSON having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

THE REGISTRATION OF TEACHERS.

A CONFERENCE convened by the Federal Council of Secondary School Associations, in conjunction with the Head Masters' Conference, the National Union of Teachers, and the Associations of Technical Institutions and of Teachers in Technical Institutions, was held on November 13, at Clothworkers' Hall, Mincing Lane, to consider the subject of the Registration of Teachers. Sir Herbert H. Cozens-Hardy, Master of the Rolls, presided, and among those present were Sir Owen Roberts (Master of the Clothworkers' Company), Sir R. Morant, and the Hon. H. M. Bruce (representing the Board of Education), Sir James Yoxall, M.P., and Dr. J. D. McClure.

Mr. J. Easterbrook (Chairman of the Federal Council) said that in May last a small Committee was appointed to arrange for a conference in the autumn if they could discover sufficient agreement between the leading associations of teachers to warrant them in hoping that such a conference would lead to satisfactory results. The preliminary negotiations were sufficiently promising to justify further action, and the present conference was called. Neither Scotland nor Ireland had been included, nor had they summoned any direct representatives of University teachers. It was very desirable that such representatives should be included on the Council, and there was a place for them in the suggested scheme as nominees of the Crown. Thirty-seven associations had sent representatives. There were no direct representatives of such bodies as the Classical, Modern Languages, or English Associations. It had never been seriously maintained that there could be representation by subjects, and the interests in registration of such associations were sufficiently covered by other organizations, such as that of Assistant Masters in Secondary Schools. Unfortunately there was no representative of the different associations of music teachers. They were undecided whether to come on the official register or to have a register of their own. No scheme could possibly be devised which would not be open to criticism from one side or another. The Committee hoped that it had settled on a middle course between those who thought that a small council composed of a few heads of the profession would be adequate and those who considered that every section and interest should be directly represented on it. It was his hope that the Order in Council might be enabled to bring into existence a First Registration Council, which would be generally acceptable to teachers.

After discussion resolutions were passed to the effect that the Order in Council should provide for the formation of a Registration Council to consist of representatives of teachers in elementary, secondary, and technical schools, schools of art, &c., and representatives of certain other educational associations; that the Register should satisfy the statutory requirements contained in the Act—*i.e.*, the names of all registered teachers in alphabetical order in one column, their addresses, the date of their registration, their attainments, training, and experience, and such further statements as the Council might from time to time determine that it was desirable to set forth.

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GERMAN IN SECONDARY SCHOOLS.

THE following (second) letter, signed by representatives of the Modern Language Association, the Society of University Teachers of German, the Teachers' Guild, and the British Science Guild, has been addressed to the President of the Board of Education:—

On behalf of Associations and other bodies concerned with the study of modern languages we, the undersigned, beg to convey to you our sense of disappointment generally with the "Memorandum on Language Teaching in Secondary Schools in England" (Circular 705) and our dissent in particular from several of the doctrines and statements laid down in its concluding paragraphs.

We desire, in the first place, to say a word on one point which was not directly referred to in our former letter, but which we feel to be of great importance. It is shown conclusively that the Board of Education has not obtained, and cannot obtain, the materials required for making the return on the time allotted to modern language teaching in schools in the exact form that the motion in the House of Lords, made on February 5, 1908, demanded; but there seems no good reason why the Board should not furnish Parliament and the public, in whatever shape it thought good, with the information suggested by the motion. What we desire to know, and what the Board has full power and opportunity for ascertaining, is the present condition of modern language teaching in secondary schools, the place assigned to it in the curriculum by head masters and governing bodies, the relation in which it stands to the teaching of classics and of English, the qualifications, emoluments, and status of its teachers. On these points the memorandum throws no light, for it is impossible to draw any conclusion from the reports of the Board's Inspectors therein summarized. Worse than this, the Board, while acknowledging the great value of an investigation conducted on the lines that are here suggested, can see no prospect of its undertaking the work for years to come. We would respectfully submit to the Board that it would be possible, at least, to give as full and adequate an account of the state of modern language teaching in England as has been given about the teaching of various subjects in the special reports on more than one foreign country.

In another respect the memorandum is equally disappointing. The circulars issued by the Board on the teaching of history, geography, and geometry were well considered documents sanctioning the views of experts in their respective subjects. They have greatly influenced educational opinion and have been welcomed as practical aids to teachers. We looked for something analogous in a memorandum on language teaching, but we search in vain. We feel that many would welcome guidance on those questions which are now engaging the attention of modern language teachers—*e.g.*, the new or direct method of teaching, use of phonetics, compulsory oral tests in examinations, prescription of set books.

In particular, we desire to take exception to paragraph (16) of the memorandum which professes to answer a letter on the position of German in secondary schools addressed by us to you in November, 1908.

It is granted that "the advance in the study of German is not at the present moment as rapid as the advance in the study of French or even of Latin." We would submit that there has been no advance in the study of German, but rather a rapid and alarming retrogression. If the present rate of decrease in the number of candidates offering German in the Local Examination continues, there will in three years' time be no candidates in German for the Oxford Locals, and in about four years' time none for Cambridge Locals.

The statistics set forth in the memorial were, for the sake of brevity, confined to Local Examinations, but the figures of the Joint Board Examinations, of the Army Entrance Examinations, the Army Qualifying Examination, and of the examinations of the College of Preceptors, all point to the same conclusion.

As regards the contention that "the curriculum of schools is necessarily guided by the course of the Universities to which it is to lead," we would observe that only a fraction of the pupils in State-aided schools proceed to the University, and no curriculum can be deemed satisfactory which does not satisfy the needs of the bulk of the scholars. The majority of the pupils in these schools leave school before the age of seventeen, and it is allowed that, for such pupils, "both practically and educationally German is a language of the first importance"; yet the Board throws the whole weight of its influence into the scale of Latin as against German, apparently out of consideration for the one boy in a hundred who will go on to the University. And in this case, what would be confessedly good for the many would be no less good for the favoured few. The number at Oxford and Cambridge taking medicine, science, and modern subjects is rapidly on the increase, and it is a constant cause of complaint among the professors and teachers of these subjects that their pupils come to them heavily handicapped by their ignorance of German. It is hardly necessary to insist on the value of a knowledge of German to Honour students in every faculty.

Our suggestion that the Board should encourage and foster schools of the type of the German *Realschule* and *Oberrealschule* is not noticed, but it is indirectly negatived by the insistence on Latin as one of two foreign languages where two are taught.

We would reiterate our conviction that a sound and thorough literary training can be given through English, German, and French, without a knowledge of Latin. If, in the words of the memorandum, English can serve as "the backbone of a humanistic education," surely a combination of English, German, and French would constitute a valuable type of humanistic education.

We greatly regret that the Board has not as yet seen its way to lead public opinion on so vital a matter as the study of modern languages, and we express a hope that the memorandum is not its last word.

PRIVATE INITIATIVE IN SWEDISH SCHOOLS.

By J. S. THORNTON, B.A.

IN the year 1828 the Swedish State, recognizing the rigidity apt to characterize State schools, erected a secondary school (the Nya Elementarskola), whose special purpose should be to try educational experiments for the good of the other schools in the land. That school still exists, and a history of its proceedings was published a few years ago. It has done good and useful work, amply justifying the yearly expenditure on it, which cannot be less than £6,000 or £7,000. But, though very extraordinary measures were taken to secure to it an unlimited freedom of experiment, it tries fewer and fewer experiments as the years go on—approximates, in fact, more and more to an ordinary State secondary school.

The State schools in Sweden were absolutely free until 1904, except that some small payment had to be made for firing, for the school library, and for repairs. But now a fee of 30 kronor (nearly 34s.) a year is charged in the upper school (gymnasium) and 20 kronor in the lower (*Realskola*). These fees are so low that a good private school (at any rate for boys) can hardly exist, unless the State give a subvention much more liberal than is given, for example, in Denmark. In 1908 eleven aided schools of this kind—some of them boys' schools and the rest co-education schools (*Samskolor*)—received altogether less than £6,000.

Was it worth while? Was there an adequate return to the State for the sums expended? A sufficient answer will be found below from last year's Bill for Regulating Payments to Communal and Private Schools (Kungl. Majestets nådiga Proposition, No. 163), in a statement drawn up by three of the schools in question and inserted by the Government as an appendix at pages 171–173 of the Bill. The last part of this appendix runs as follows:—

People often think that private initiative may henceforth be dispensed with; and so it may be of use for once to take a bird's-eye view of what private schools have hitherto accomplished and what they still occupy themselves with. Such a hasty bird's-eye view cannot be in any measure complete; but even a few outlines may be of interest.

I. *New Forms of Organization.*

Teaching of boys and girls together in the higher school. (Here Palmgren's Samskola led the way.)

The elementary school as the basis for the higher school. (Fjellstedtska School; private school in Lund.)

The division of the higher school into a middle school and a gymnasium, with completed courses and separate goal for the middle school. (Here the private school and gymnasium in Uppsala led the way.)

The three-year Gymnasium, *with the three-year Latin course*, as against the usual four-year course. (Uppsala Private Gymnasium.)

Experiments with different (foreign) languages as chief language, and a varying order in which they succeed one another. (Beskow's School, Fru Almquist's Samskola, Whitlock's Samskola, Uppsala, Gothenburg, and Lundsberg.)

The higher school arranged as a country boarding school. (Lundsberg.)

Measures for diminishing the pressure of too many subjects, partly by "concentrated instruction," partly by finishing certain subjects midway in the school course. (Beskow's School, Fru Almquist's Samskola, Whitlock's Samskola, and Lund.)

Class libraries and class museums. (Whitlock's Samskola.)

Lectures outside the school course. For instance, from Whitlock's Samskola has come the plan for lectures and demonstrations in social subjects, which have been arranged in common for schools in Stockholm.

Instruction in sexual hygiene. (Whitlock's Samskola and Uppsala.)

II. *Practical Subjects in the Service of Education within the Higher School.*

Educational wood-sloyd. (First came Palmgren's Samskola. The formation of courses and methods has also been promoted by other private schools.)

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Smiths' work and other work in metal. (Uppsala Private School.)

Household economy in the Samskola. (Uppsala Private School.) The School of Household Economy in Uppsala, the most important institution of its kind in Scandinavia, had its beginning in the school kitchen of the private school.

Book printing (in Gothenburg. The Samskola, for instance, prints school books).

Bookbinding (Whitlock's Samskola).

Free games in school time, as part of the time-table. (Whitlock's Samskola, Uppsala, Lundsberg, and other schools, with a paid instructor.)

III. *New Methods in Various Subjects.*

Improvements in religious instruction are promoted especially by Whitlock's Samskola and the Samskola in Gothenburg.

A rearrangement of the instruction in the mother tongue; lectures whose aim is to teach pupils to express themselves orally; essay writing, even in the lowest classes (Beskow's School, Whitlock's Samskola, Uppsala, and others).

There are two schools which have been foremost in introducing the new method of language instruction (the imitative method and practical instruction)—Beskow's School (with the help of Hjorth's and Lindhagen's text-books) and Palmgren's, whose contributions to education in matters like Sloyd and language teaching have awakened attention in foreign lands. Modern methods in language teaching have been built up and applied in all private schools long before they found entrance into the public schools.

A new ordering of the way of teaching Greek. (Uppsala Private Gymnasium.)

New plans for teaching history, with the aim of uniting Swedish history and general history, and also of bringing political history, church history, and the history of literature into closer mutual connexion. (Beskow's School, Whitlock's Samskola, and Uppsala.)

The uniting of instruction in geography and biology in the lower classes. (Beskow's School and Gothenburg.)

The new scheme for teaching mathematics in the Realskola was first drawn up and applied in Fru Almquist's School and in Beskow's School.

Methods of teaching botany and geology, with chief weight laid upon the purely biological sides of the subject, and with experiments and series of observations conducted by the pupils, had long been in use in private schools (*e.g.*, in Stockholm, Gothenburg, and Uppsala) before they were formulated in the new schemes of the public schools.

The improvement of the teaching of drawing and the application of drawing as a means of expression (*e.g.*, by connecting it with essay writing) has been carried out in several private schools (amongst others, in Whitlock's Samskola, in Gothenburg, and Uppsala).

A series of models for metalwork in accordance with educational needs (in direct opposition to the methods used in the elementary school) has been worked out and put into use in Uppsala.

CONFÉRENCES FRANÇAISES.

SOCIÉTÉ NATIONALE DES PROFESSEURS DE FRANÇAIS.

LES COQUELIN.

Par Madame LATOUR.

LE samedi, 30 octobre, devant une salle plus que comble, Mme Latour nous a parlé des Coquelin, de ces acteurs de génie qui ont rempli le monde de leur célébrité et ont porté partout le goût des lettres françaises. M. Barlet était au fauteuil.

Quand on parle des Coquelin, nous a dit Mme Latour, on éprouve d'abord le besoin de dire qu'ils étaient trois, car ils sont nombreux ceux qui ne pensent qu'à Constant Coquelin, laissant dormir son frère Ernest dans la gloire de l'aîné, et ne s'occupant pas de Jean Coquelin, qui ne dément cependant pas son père.

Les Coquelin sont originaires de Boulogne. Constant Coquelin naquit en 1841 à Boulogne, dans une petite chambre modeste et proprette au-dessus de la boulangerie que tenait le papa. Cette boulangerie, rendez-vous des matelots et des "matelottes" du port qui venaient s'y régaler de chaussons aux pommes, était l'orgueil du père et de la mère Coquelin. Sans doute, le soir, durant la partie de cartes familiale, quand il fallait aller moucher les chandelles, qui l'éclairaient seules, c'était à qui n'irait pas; mais cela ne les empêchait pas d'aimer leur boutique presque à l'égal de leurs enfants. Cependant, quand les Coquelin eurent deux fils en âge d'apprendre à lire, Constant et Ernest, l'ambition du père Coquelin fut d'en faire des "savants." C'est pourquoi on les envoya à l'école. La maîtresse de pension, personne très recommandable d'ailleurs, menaçait les enfants de punitions toutes les fois qu'elle était à court pour ses explications. N'empêche que les petits Coquelin étaient, vers 13 ans, tout à fait prêts à entrer à la pension Taverne, le grand établissement où le père Coquelin rêvait de les envoyer. Constant Coquelin s'y montra déjà amateur de vers et caricaturiste remarquable, si bien que, quand il rentra à la maison, il ne manifesta nul goût pour la place de mitron que lui destinait son père. Bien plus, il osa parler de vocation théâtrale au bonhomme. Ce fut un scandale dans la maison. Mais une représentation d'amateurs qui fournit à Constant Coquelin l'occasion d'affirmer son talent dramatique, et même son talent de caricaturiste, en chantant une chansonnette comique de sa composition qui croquait quelques Anglais en villégiature à Boulogne, décida le père à céder aux prières du fils. Constant jura de rester honnête homme quoiqu'acteur, et partit pour Paris. Il laissait à la maison le petit frère bien triste de ne pas le suivre. Quant à lui, après neuf mois de conservatoire, il remportait un prix qui lui ouvrait la Comédie Française, où, deux ans plus tard (1861), il devenait sociétaire. Alors, chaque création est une victoire pour Constant Coquelin. Molière, Regnard, Beaumarchais sont à cette époque les auteurs qu'il fait applaudir; tandis que son jeune frère se débat dans les difficultés de fléchir le père une seconde fois. Pauvre Ernest! pour le détourner de l'idée du théâtre, son père lui a procuré chez un pasteur protestant, à Herne Bay, une place de maître de dessin et de maître de français. Le français, passe encore, Ernest peut très bien l'enseigner. Mais il n'a jamais su manier un crayon, et il en est réduit à déclarer à ses élèves qu'il ne croit qu'à la théorie dans l'enseignement du dessin et condamne tout maître qui se sert du crayon devant ses élèves. Il n'est pas plus heureux quand, quelques mois plus tard, revenu d'Herne Bay, il entre dans le contentieux des chemins de fer. Là, il doit se déclarer incapable de faire une addition juste. Bien lui en prit, car le père Coquelin, vaincu, permit à Ernest d'aller retrouver son frère à Paris. Ce fut le 10 juin 1868 que les deux frères se rejoignirent, et, un an plus tard, ils jouaient tous les deux sur la scène de la Comédie Française. Tout d'abord Cadet, comme on l'appellera désormais, ne vécut que dans l'ombre de son frère. Il fallut la création de l'*Ami Fritz*, de son rôle dans la pièce de *Barberine* et dans celle de *Denise*, pour faire remarquer au public qu'il y avait deux très grands acteurs dans la famille des Coquelin. Cette remarque devint de l'enthousiasme pour Cadet quand il eut poussé l'art dans la récitation du monologue si loin qu'il en fut bientôt regardé comme l'incarnateur de génie. Le travail commun des deux frères dans la maison de Molière ne dura que jusqu'en 1886. Coquelin aîné, après avoir connu à la Comédie Française tous les grands triomphes auxquels un acteur de génie peut prétendre; après avoir goûté aux gloires politiques, car il fut l'ami de Gambetta, et, au 16 mai 1876, il osa lancer vers la loge du garde des sceaux les brocards de Figaro avec une fougue toute républicaine; après tous ces succès, Constant Coquelin rêva d'une réputation mondiale. Il quitta la Comédie Française, pour aller porter dans le monde les œuvres françaises. L'Amérique et l'Europe l'applaudirent à l'envi. Il marcha de triomphe en triomphe, acclamé comme nul acteur, excepté Sarah Bernhardt, ne l'avait été avant lui. En 1890, cependant, il rentra à la Comédie Française à la prière de ses amis. Mais les ovations de l'Amérique et de l'Europe avaient exaspéré ses soifs de succès, et désormais la scène de la Comédie Française n'était plus un assez vaste champ pour lui. Il la quitta de nouveau en 1892 pour retrouver ses triomphes européens et américains. En vain, la Comédie Française lui intenta-t-elle un procès, qu'elle gagna, et qui obligeait Coquelin à lui payer mille francs d'amende toutes les fois qu'il jouait sur une autre scène que la sienne. Coquelin ne paya jamais l'amende, et ne revint pas. C'est même sur une scène parisienne autre que celle de la Comédie Française que, le 27 décembre 1897, Constant Coquelin atteignit l'apogée de son génie en créant le personnage de *Cyrano de Bergerac*. Edmond Rostand écrivit à Coquelin: "L'âme de Cyrano est passée dans votre âme, Coquelin."

Ce grand artiste, ce génie infatigable fut frappé en plein travail le 28 janvier dernier; et huit jours plus tard, ce frère que Coquelin avait tant aimé, Cadet, est venu le retrouver dans l'au-delà. Ainsi, ces deux artistes de génie se sont unis dans la mort comme dans la vie et dans l'art.

Dire que la sémillante conférencière a été applaudie à diverses reprises ne serait pas suffisant pour décrire l'état d'esprit de l'auditoire. Ç'a été une véritable ovation, bien méritée du reste à tous les points de vue, et le président, en quelques gracieuses paroles, n'a eu qu'à enregistrer un succès de plus.

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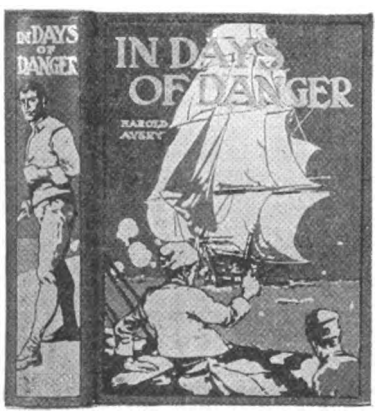

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CURRENT EVENTS.

Fixtures.

THE General Meeting of the Members of the College of Preceptors will be held on the 22nd of January. The Annual Dinner will take place at the Hotel Cecil in the evening of the same day.

* * *

THE Annual Meeting of the Head Masters' Conference will be held at the Leys School, Cambridge, December 22 and 23. Annual Dinner, December 22.

* * *

THE Annual Meetings of the Incorporated Association of Assistant Masters in Secondary Schools will be held at the City of London School, January 5 to 7. The Council will meet January 5 and 6; the General Meeting of Members, January 7. At 2.30 p.m., on January 7, Prof. Adams will deliver an address; open to all teachers in secondary schools, whether or not members of the Association. Exhibition of Educational Books and Appliances. Annual Dinner, at Pagani's (Great Portland Street, W.), January 6, at 7.15.

* * *

THE performance of the "Electra" of Sophocles will be repeated at the Aldwych Theatre, Strand, on December 16, at 8.30 p.m., in aid of the building and endowment fund of Bedford College for Women.

* * *

DR. A. R. ABELSON, D. ès L., will address the Child Study Society, London, on "Mental Fatigue," at 90 Buckingham Palace Road, S.W., on December 9, at 8 p.m.

* * *

THE first session of the seventeenth International Congress of Americanists (we are informed by the Board of Education) will be held at the National University in Buenos Ayres, May 16 to 21, 1910; and a second session will be held in Mexico in September next. The Conference will deal with questions relating to the Ethnology, Archæology, and History of the New World. A detailed programme will be published presently. Communications (oral or written) may be made in English, French, German, Italian, Portuguese, or Spanish. Further information from Dr. Lehmann-Nitsche, Calle Viamonte 430, Buenos Ayres.

Honours.

THE Royal Society has made the following awards:—the Copley Medal to Dr. G. W. Hill for his researches in mathematical astronomy; a Royal Medal to Prof. A. E. H. Love for his researches in the theory of elasticity and cognate subjects; a Royal Medal to Major Ronald Ross for his researches in connexion with malaria; the Davy Medal to Sir James Dewar for researches at low temperatures; and the Hughes Medal to Dr. R. T. Glazebrook for researches on electrical standards.

* * *

THE Royal Meteorological Society has awarded the Symons Gold Medal to Dr. W. Napier Shaw, F.R.S., in recognition of his work in connexion with meteorological science.

* * *

THE University of Oxford has conferred the honorary degree of Mus.D. upon Principal Hadow, Armstrong College, Newcastle.

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MANCHESTER UNIVERSITY has conferred the honorary degree of D.Sc. upon ex-Prof. Boyd Dawkins.

* * *

AT the final meeting of the Senate of the Royal University of Ireland the following honorary degrees were conferred:

LL.D.—Lord Castletown of Upper Ossory, K.P.; Sir Francis R. Cruise, M.D.; the Right Hon. John Young, M.A.; the Most Rev. Edward T. O'Dwyer, D.D., Bishop of Limerick; Edward Cuming, M.A.; the Right Hon. Christopher Palles, LL.D., Lord Chief Baron of the Exchequer; the Rev. William Nicholas, D.D.; the Right Rev. William E. Meade, D.D., Bishop of Cork; William J. M. Starkie, M.A., Litt.D.; Lieut.-Colonel Sir John F. G. Ross of Bladensburg, K.C.B.; Sir Henry Bellingham, Bart., M.A.; the Right Hon. the Earl of Westmeath, B.A.; the Right Hon. Lord Killanin, B.A.; Richard Whytock Leslie, M.D.; John Campbell, M.A., M.D.; the Right Hon. Michael Finucane, M.A., C.S.I.; the Rev. Edward A. D'Alton; the Very Rev. Peter Byrne, D.D.; William Richard Huggard, M.A., M.D.

M.Ch.—John Walton Browne, B.A., M.D.

D.Sc.—Alexander Macalister, M.D., F.R.S.; Alexander Anderson, M.A., LL.D.

M.A.—Frederick William Moore, M.R.I.A.

* * *

PROF. BIFFEN has been elected to a Professorial Fellowship at St. Catharine's College, Cambridge.

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DR. NORMAN MOORE, of St. Bartholomew's Hospital, and the Rev. J. N. Figgis, D.Litt., have been elected Honorary Fellows of St. Catharine's College, Cambridge.

* * *

PROF. SAINTSBURY has been elected an Honorary Fellow of Merton College, Oxford.

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A PORTRAIT of Prof. W. M. Hicks, Sc.D., F.R.S., the first Vice-Chancellor of the University of Sheffield, has been presented to the University by friends. The artist is Mr. A. S. Cope, A.R.A.

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EMERITUS PROFESSOR CRUM BROWN, of Edinburgh University, has been presented, by his students and colleagues, with his portrait. The artist is Mr. E. A. Walton, R.S.A.

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MR. R. BLAIR, M.A., B.Sc., Executive Officer to the L.C.C., has been elected a Corresponding Member of the National Education Association of America.

Endowments and Benefactions.

OXFORD CONVOCATION has accepted the Cuthbert Shields benefaction of £1,000 to advance the study of the Romance Languages and Literatures. Corpus Christi College will pay over the dividends for the use of the Taylorian Institution until the establishment of the Corpus Christi Professorship of the Romance Languages.

* * *

H.H. THE MAHARAJA SIR CHUNDRA SHUM SHERE JUNG BAHADUR RANA, D.C.L., Prime Minister of Nepal, has presented to the Bodleian Library a most valuable collection of more than six thousand Sanskrit MSS.

* * *

LORD ROSEBERY has given £1,000 to the Bodleian Library, Oxford University.

* * *

MR. HENRY F. TIARKS, a partner in the firm of Messrs. J. Henry Schröder & Co., has supplemented their endowment of a Professorship of German in Cambridge University by giving £5,000 for one or more scholarships in German—in memory of his father, the author of well known text-books on the German language.

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THE Girdlers' Company have continued for another three years their grant of £100 to Cambridge University for the endowment of the Lectureship in Economics.

* * *

THE Executive Committee of the Frederic William Maitland Memorial Fund have offered the University of Cambridge a bronze bust of the late professor for the Squire Law Library, and the balance of the fund for the promotion of research and instruction in the history of law and of legal language and institutions.

* * *

MR. WILLIAM DE MORGAN has presented to the library of the University of London a collection of books, pamphlets, and MS. material formerly belonging to his father, Augustus De Morgan, who was for over thirty years Professor of Mathematics at University College, and whose library of mathematical and astronomical works was presented to the University by Lord Overstone in 1871.

* * *

AN anonymous donor has given £100 to provide a George Smith Studentship in London University this year, no money being available in the ordinary course.

* * *

THE Drapers' Company has made a further grant of £10,000 to the building fund of Bangor University College.

* * *

THE citizens and Corporation of Glasgow have contributed some £50,000 for the extension and improvement of the Medical School of the University. A scheme just adopted by the General Council contemplates the creation of four new medical chairs.

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MESSRS. POLLETT & WIGGELL (Sowerby Bridge, Yorkshire), the National Gas Engine Company (Ashton-under-Lyne), Messrs. Drysdale & Co., and the Chatham (Ship) Telegraph Company (Bootle) have severally made valuable donations of machinery to the Engineering Laboratory of Dundee University College.

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MRS. JAMES S. SHARPE, of Whitestones, Rothiemay, Banffshire, has bequeathed two bursaries, £30 each for four years, tenable at Aberdeen University; and eight bursaries of £5 each, tenable at local public schools.

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THE REV. DR. BLAIR, Dunblane, has given 100 guineas to provide an annual prize in Greek in the United College, St. Andrews.

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MR. WILLIAM GIBSON, of London, a citizen of Belfast, has presented a handsome gold mace to the Queen's University, Belfast.

* * *

MR. EDWARD L. BECKWITH, Eastbourne, has left £14,000 to the Corporation of the Sons of the Clergy, payable on the death of the first of his two sons, and £6,000 additional on the death of his other son, and, on the last-mentioned event, £5,000 to the Fishmongers' Company for the foundation of two scholarships of £75 a year each—one for a student at the Royal College of Music, the other for a student of sculpture at the South London Technical Art School at Kennington (City and Guilds of London Institute).

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COLUMBIA UNIVERSITY will receive some four and a half million dollars (nearly £1,000,000) under the will of the late Mr. John S. Kennedy; also gifts amounting to about £47,200, of which £22,500 is from Mr. W. H. Charpentier, to be added to the J. S. Charpentier Fund, and £20,000 is given anonymously.—Yale University has received from Mr. W. D. Sloane and Mr. H. T. Sloane the sum of £95,000

to build, equip, and endow a physical laboratory; £5,000 from Mr. A. G. Vanderbilt for general endowment; and £3,000 from Mr. G. H. Meyers for the endowment of the Forest School.—The Pratt Institute of Brooklyn has received the sum of £350,000 from Mr. Charles M. Pratt, son of the founder and now its President, and from his five brothers and his sister, Mrs. E. B. Dane.—Dr. K. Pearsons has offered to give £20,000 to Berea College, provided that the sum of £80,000 is otherwise subscribed.—Mr. N. B. Duke has made a further gift of £10,000 to Trinity College at Durham, N.C.—Princeton University has accepted a gift of £100,000 from Mr. W. C. Proctor, of Cincinnati, on condition that an equal sum be obtained by May 1, 1910.—Haverford College has received £20,000 to establish a fund for pensioning its professors.—The General Education Board in the United States has made a conditional grant of £25,000 to Ohio Wesleyan University at Delaware, O.—Mrs. Charles E. Perkins, of Burlington, Ia., has given £6,000 to Harvard University to establish scholarships for students from Iowa. Harvard University has also received gifts amounting to £1,320, to be used for the immediate benefit of freshmen in Harvard College.

Appointments and Vacancies.

Mr. J. S. Gardiner, M.A., Fellow of Gonville and Caius College, has been appointed Professor of Zoology and Comparative Anatomy in the University of Cambridge.

* * *

The Professorship of Russian and other Slavonic Languages in Oxford University is vacant by the death of Prof. W. R. Morfill, M.A., F.B.A.

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Mr. John F. Stenning, M.A., Fellow and Lecturer in Hebrew at Wadham College, has been appointed University Lecturer in Syriac and the other Aramaic dialects.

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It is proposed to appoint a Reader in the English Language and Older English Literature at Oxford. £300 (possibly £500), tenable with a fellowship.

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Mr. F. E. Pargiter, M.A., Exeter College, has been appointed Oxford Correspondent of the Bureau of Information for Indian Students.

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In the University of Dublin Prof. J. Sinclair Baxter has been appointed Regius Professor of Feudal and English Law, and Mr. Charles Maturin, LL.B., succeeds him in the Chair of Civil Law and General Jurisprudence. Mr. Thomas Rudmose-Brown, M.A. Aberd., Ph.D., formerly Lector in English in the University of Grenoble, and now Lecturer in French in Leeds University, has been appointed to the Chair of Romance Languages.

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Mr. David Waterston, M.D. Edin., Lecturer in Anatomy, Edinburgh University, has been appointed Professor of Anatomy in King's College, London.

* * *

Miss E. Greene, Mathematical Tripos, Cambridge, has been appointed Mathematical Tutor in the Secondary Training Department of Bedford College, University of London; and Mlle M. Orliac, B. ès L., Assistant in the French Department.

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Mr. Hardress O'Grady has been appointed Lecturer in French at the Goldsmiths' College, University of London.

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Mr. Westcott Abell has been appointed to the Elder Chair of Naval Architecture in the University of Liverpool.

Mr. C. D. Henderson, M.A., B.Sc. (Aberd.), Ph.D. (Freib.), has been appointed Lecturer in Zoology in the University of Manchester.

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The University of Leeds requires an Assistant Lecturer in French. £200. Apply to the Registrar by December 6. University graduate preferred.

* * *

In Birmingham University, Mr. Arthur J. Kenny, B.A., has been appointed Assistant Lecturer in Mathematics; Mr. J. Cameron Douglas, M.A., B.Ch. Oxon., Lecturer in Pathology and Bacteriology; and Mr. Leonard Doncaster, M.A., Special Lecturer in Heredity and Variation.

* * *

In Sheffield University, Mr. J. H. Sleeman, M.A., has been appointed Lecturer in Mathematics; and Mr. A. W. Bartlett, M.A., B.Sc., Assistant Lecturer and Demonstrator in Botany; and Mr. A. H. Thomas, M.A. Cantab., Lecturer in Ecclesiastical History.

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Mr. J. P. Thorpe, F.R.S., D.Sc., Ph.D., has resigned his post as Lecturer in Bio-Chemistry and Demonstrator in Chemistry in Manchester University, on his election to the Sorby Fellowship (Sheffield) by the Royal Society.

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The Commissioners under the Irish Universities Act, 1908, have appointed the following Professors in University College, Dublin:—Mathematics, H. C. M'Weeny; Chemistry, Dr. Hugh Ryan; Experimental Physics, Dr. J. A. M'Clelland; Mathematical Physics, Dr. Arthur W. Conway; Zoology, Dr. George Sigerson; Anatomy, Dr. E. P. M'Loughlin; Surgery, J. S. M'Ardle; Geology, H. J. Seymour; Physiology and Histology, Dr. B. J. Collingwood; Pathology and Bacteriology, Dr. E. J. M'Weeney; Medicine, Sir Christopher Nixon; Civil Engineering, P. F. Purcell. And the following Lecturers:—Eastern Languages, Rev. P. Boylan, M.A.; Physics, J. J. Dowling, M.A.; Modern Irish History, Miss M. Hayden, M.A.

* * *

A Professor of History is required in the National University of Ireland (University College, Dublin). £500. Apply to the Secretary to the Commissioners, University Buildings, Earlsfort Terrace, Dublin, by December 18, with three testimonials and three references.

* * *

In University College, Cork, Mr. P. J. Merriman, M.A., J.F.R.U.I., has been appointed Professor of History; the Rev. R. Henebry, Ph.D., Professor of Irish Language and Literature; Major H. A. Cummins, M.D., Professor of Botany; Mr. Isaac Swain, B.A., Professor of Geology and Geography; and Mr. Timothy Smiddy, M.A., F.C.S., Professor of Economics and Commerce. And the following have been appointed Lecturers:—Miss Mary Ryan, M.A., formerly J.F.R.U.I., in German; Miss Elizabeth M. O'Sullivan, M.A., in Methods of Education; the Rev. T. E. Fitzgibbon, O.S.F.C., B.A. (R.U.I.), Ph.D. (Louv.), in Philosophy; Mr. M. J. Conran, M.A., J.F.R.U.I., in Mathematical Physics; Dr. J. J. Fitzgerald, M.B., in Mental Diseases; and Mr. A. J. Magennis, A.S.A.A., in Accounting.

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In University College, Galway, Mr. T. O'Maille, M.A., Ph.D., has been appointed Professor of Modern Irish Language and Literature; and Mr. J. Griffiths, B.Sc., Lecturer in Electrical Engineering.

* * *

Prof. John Watson, M.A., LL.D., Queen's University, Kingston, Canada, has been appointed Gifford Lecturer in the University of Glasgow for 1910–11, 1911–12.

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In University College, Reading, Prof. Percival, Director of the Department of Agriculture and Horticulture, has been appointed Professor of Agricultural Botany; Mr. Ronald V. O. Hart-Synnot, D.S.O., B.Sc., Director of the Department of Agriculture and Horticulture; Miss Caroline Herford, formerly Head Mistress of the Ladybarn House School and President of the Teachers' Guild in Manchester, Lecturer in Education (Secondary Division), in succession to Miss Mary Grey, resigned; Mr. Percy C. Austin, M.A., late Scholar of Emmanuel College, Cambridge, Lecturer in Chemistry; Mr. Archibald Y. Campbell, B.A. Cantab., Assistant Lecturer in Classics, Liverpool University, Lecturer in Classics; Mr. F. G. Drew, Lecturer and Practical Instructor in Horticulture, in room of Mr. Charles Foster, resigned; Mr. Herbert L. Hawkins, B.Sc., M.A. Manc., Lecturer in Geology; the Rev. L. M. J. Couturier, L. ès L., Lecturer in French; and Mlle E. A. Régis, Assistant for Conversational French.

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Mr. J. E. Gately, M.A. Liv., has been appointed Professor of History and Economics at Agra.

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The Rev. John Dickie, M.A., Tarland Parish Church, Aberdeenshire, has been appointed Professor of Systematic Theology and New Testament Language and Literature in the College of the Presbyterian Church of New Zealand at Dunedin.

* * *

The University College of North Wales requires an Assistant Lecturer in History. Apply to the Registrar by December 4.

* * *

In University College, Dundee, Miss Helen S. Ogilvie, M.A., B.Sc., has been appointed Assistant Demonstrator in Botany; and Miss Janet B. Scott, B.Sc., Assistant Demonstrator in Chemistry.

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Mr. C. E. Jackson, M.A. Oxon., Senior Physics Master, Bradford Grammar School, has been appointed an Inspector of Schools under the Board of Education.

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The Rev. H. W. Thorne, M.A. Oxon., Sub-Warden of the Church Training College for Lay Workers, has been appointed Diocesan Inspector of Schools in the Stafford and Stoke Archdeaconries of the Diocese of Lichfield.

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Mr. W. Durnford, M.A., of King's College, has been appointed Honorary Principal of the Day Training College, Cambridge; Mr. F. G. Blandford, M.A., Corpus Christi, Director of Studies for the Secondary Students; and Mr. W. H. S. Jones, M.A., St. Catharine's, Lecturer in Classics for the Secondary Students.

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The Trustees of the Barrington Lecture Fund require a Lecturer in Political and Social Science for 1910. £210; no expenses paid. Apply to the Hon. Secretaries of the Statistical and Social Inquiry Society of Ireland, 35 Molesworth Street, Dublin, by December 15, with not more than six testimonials.

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The Rev. Dr. Edmond Warre has been appointed Provost of Eton College.

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The Rev. Albert A. David, M.A., Head Master of Clifton College, has been appointed Head Master of Rugby School. Mr. David was an assistant master at Rugby from 1892 to 1899.

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Mr. John Miller, M.A., D.Sc., interim Head of the Mathematical Department, has been promoted to the Chair of Mathematics, in the Glasgow and West of Scotland Technical College, in succession to Prof. G. A. Gibson.

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Merchant Taylors School, London, requires a Chief Mathematical Master. Apply to the Head Master.

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The Head Mastership of Rochester Cathedral Grammar School will be vacant at Christmas.

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Mr. A. J. F. Collins, B.A. Oxon., Assistant Master at Reading School, has been appointed Lecturer in the University Tutorial College, Cambridge.

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Mr. W. H. Ault, B.Sc. Lond., Science Master, Grammar School, Sutton Coldfield, has been appointed Head Master of the Municipal Technical School, Sutton Coldfield.

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Mr. G. L. Bradley, B.A. Cantab., Senior Mathematical Master, Royal Grammar School, Worcester, has been appointed Head Master of the County School, Penzance.

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Mr. R. Dark, County School, Penarth, has been appointed Head Master of the Duke of York's Military School, Dover.

* * *

Mr. James Valentine, M.A. St. Andr., St. George's School, Harpenden, has been appointed Head Master of the County School, Harwich.

Scholarships and Prizes.

Gonville and Caius College, Cambridge, offers a Wollaston Research Studentship in Physics (£120 a year), and other studentships of smaller value, open to students of all British, Colonial, and American Universities, in June, 1910. Particulars from the Master.

* * *

St. Catharine's College, Cambridge, offers eight Scholarships and Exhibitions (£35 to £60, and £20 to £30, for three years) for competition on January 5–7. Subjects: Classics, Mathematics, Theology, History. Age limit (not so strictly enforced in the case of Exhibitions), nineteen. Forms of application from the tutors (A. W. Spratt, Esq., or the Rev. W. T. Southward), to whom certificates of birth and character must be sent by January 4.

* * *

Magdalene College, Cambridge, offers four Scholarships (each £60 to £40 a year for two years and continuable) and two or more Exhibitions (usually £30 a year) for Classics, Mathematics, Modern History, and Mechanical Sciences, for competition March 15–17, 1910. Particulars and forms from the Master, or from A. G. Peskett, Esq., Tutor.

* * *

Cambridge University offers two Squire Scholarships in Law, £50 a year each for three years, in July, 1910. Apply for form (by letter) to the Secretary to the Special Board for Law, Law Schools, Cambridge.

* * *

The North British Academy of Arts, Science, Literature, and Music (Claremont Buildings, Newcastle-on-Tyne) offers annually six open scholarships to students (of either sex) making music their profession. Age limit, twenty-five. Apply to the Honorary Secretary.

Literary Items.

The Cambridge University Press will publish early next year Prof. Feuillerat's monograph on John Lyly, containing particulars of several important discoveries concerning Lyly's life and a

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full study of the plays and of Euphuism, and throwing new light on the "Euphues" and its social import.

* * *

MESSRS. DENT announce three new volumes in their charming series, "Les Classiques Français," edited by Mr. H. Warner Allen: "Les Fables de la Fontaine," with preface by Jules Claretie; "Chansons de Béranger," with preface by Jacques Normand; and "Les Pensées de Pascal."

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MR. T. FISHER UNWIN has just been appointed by the War Office as agent for the sale of the Topographical Section General Staff Maps. Among these are many important maps of China, of various regions of Africa, and of the East and West Indies.

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MR. UNWIN is publishing several new Ordnance Maps on the scale of one inch to the mile—a size peculiarly suitable for pedestrians. The new maps cover the districts surrounding the following places: Reading, Nottingham, Lincoln, Buxton, Bridgend, and Stonehaven.

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MESSRS. CHRISTOPHERS will publish immediately "Broad Lines of Science Teaching," a series of papers by well known teachers edited by Dr. Hodson, Senior Science Master at Bedales. Prof. Sadler furnishes a comprehensive introduction on the present position of science teaching.

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MESSRS. APPLETON announce a new work by Prof. Hugo Münsterberg of Harvard University—"Psychology and the Teacher"—a study of the school child in the light of modern psychology.

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THE *English Review* for November contains a very interesting paper, on "The English Educational Renascence within the Circle of the Triumvirate" (Comenius, Hartlib, and Dury), by Prof. Foster Watson. "I would venture to assert that the Age of Cromwell is the Age of the English Educational Renascence."

General.

MR. C. E. TOWN, Assistant Secretary of the London Chamber of Commerce, has been presented with a silver cup by the Chairman, Vice-Chairman, and Jurors "as a mark of their appreciation of the services which he rendered in connexion with the Balkan States Exhibition, 1907."

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THE foundation stone of the new extension buildings of the University College and Day Training School, Exeter, was laid by the Mayor of Exeter (Ald. J. G. Commin), November 8. The cost of the scheme will be some £15,000.

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THE newest universal language, "Ido," is reported to be making rapid progress in Switzerland. Prof. Boubier, of Geneva University, has lectured on it to crowded audiences, and, during this winter, free classes on the subject will be given twice a week at the University. "Ido" is said to be "easier to learn and more cosmopolitan in its construction than Esperanto."

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THE Neuchâtel Academy, founded in 1866 and reorganized in 1894, has been elevated to the status of a University (October 19).

* * *

QUEENSLAND is going to establish a University. The Government has introduced a Bill with this object, following the recommendation of the Royal Commission appointed to inquire into the matter.

THE new German University in Tsing-Tau was opened (October 25). It accommodates some 200 students.

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MR. EDWIN GINN, a wealthy publisher of Boston, has announced that he will devote annually £10,000 to promote the cause of peace, and that in his will he has set aside £200,000, the income of which will be used for the same purpose. He intends to establish an International School of Peace, with a large staff of writers, lecturers, and teachers, to be paid out of the proceeds of subscriptions.

THE COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on the 20th ult. Present: Mr. E. A. Butler, Vice-President, in the chair; Prof. Adams, Dr. Armitage Smith, Mr. Bain, Rev. J. O. Bevan, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Brown, Mr. Charles, Miss Crookshank, Mr. Eagles, Mr. Eve, Miss Jebb, Mr. Kelland, Rev. R. Lee, Mr. Marx, Mr. Millar Inglis, Mr. Pendlebury, Mr. Pinches, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, Mr. Storr, Mr. Vincent, and Mr. White.

The minutes of the last meeting were read and confirmed.

The Secretary reported the arrangements that had been made for the forthcoming Certificate and Lower Forms Examination to take place in the second week in December at 125 centres in the United Kingdom and at 35 colonial centres.

The representatives of the College reported the resolutions adopted at the Conference of Representatives of Associations of Teachers on the subject of teachers' registration, which had been held at the Clothworkers' Hall on November 13.

The report of the Special Committee on the work of the College was adopted.

The diploma of Associate was granted to the following, who had satisfied all the required conditions:—C. J. Brown, J. Garriock, S. Ignasimuttu, G. A. Nicolson, P. H. Prideaux, T. W. Girling.

Mr. Millar Inglis and Mr. Storr were appointed the representatives of the College on the Joint Scholarships Board for the ensuing year.

Prof. Adams was appointed to deliver the Psychology Course of Lectures for Teachers, to take place in the early part of next year.

The following persons were elected members of the College:—

Mr. H. C. Hopkyns, B.A. Oxon., The Grammar School, Enfield.
Miss S. Moss, Friends' School, Mountmellick.
Rev. H. H. Buswell, Quatre Bornes, Mauritius.

The following were admitted to the privileges of membership without payment, under Section II, clause 5, of the By-Laws:—

Mr. L. E. Littlewood, A.C.P., Althorne, Alum Chine, Bournemouth.
Miss A. R. Kiln, A.C.P., All Hallows School, Ditchingham.
Mr. J. P. O'Kearney, A.C.P., De La Salle School, Castletown, Queen's County.

The following books had been presented to the Library since the last meeting of the Council:—

By the CITY AND GUILDS OF LONDON INSTITUTE.—Report of the Department of Technology, 1908-9.

By A. & C. BLACK.—Black's Literary Readers, Book IV; Supplementary Readers (2 Books); Herbertson's Descriptive Geography from Original Sources (The British Isles); Kirkman's De Glouvet's Trois Héros de l'Ancienne France.

By BLACKIE & SON.—Blackie's Adaptable Arithmetics (Tests); Scottish Supplementary Readers (2 Books); Berry's Educational Handicraft; Bevan's Method of Analysis; Cain's Brief Course in the Calculus; Caven's Systematic Qualitative Analysis; Gregory's Physical and Structural Geography; Laurence's Little Folk in Many Lands; Lyde's Teaching of Geography; Magee's Le Chat Botté; Oswald's Advanced German Commercial Correspondence; Rey's French Composition, Parts I and II; Saillens and Holme's First Principles of French Pronunciation; Schmall's First Course in Analytical Geometry; Slater's German Conversational Sentences.

By W. B. CLIVE.—London University Guide and U.C.C. Calendar.

By GINN & Co.—Long's English Literature.

By MACMILLAN & Co.—Clarke's Daudet's Lettres de Mon Moulin, and Word- and Phrase-book; Goldberg's Daudet's Jack, Part II, and Word- and Phrase-book; Schoedelin's D'Aulnoy's L'Oiseau bleu.

By METHUEN & Co.—Carter's The Story of Milton's Paradise Lost; Rhoades's Deux Contes (from Prosper Mérimée); Wilmot-Buxton's Stories from Modern History.

By J. MURRAY.—Jose's The Growth of the Empire.

By the OXFORD UNIVERSITY PRESS.—Delbos's Cousin's La Société Française au XVIIe Siècle; Herbertson's Elementary Geography, Vols. II and IV.

By ALSTON RIVERS.—Fox's Selections from Wordsworth.

By RIVINGTONS.—Whitham's Readings in Old Testament History, Parts I and II.

Calendar of University College, London.
Calendar of University of Birmingham.
Calendar of University College, Nottingham.

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THE EDUCATIONAL LADDER.

ABERDEEN UNIVERSITY.—Divinity Bursaries: Knox, Harry Leggatt, M.A., and Louis E. M'Vicar, B.A.; Sutherland, A. G. Reaper, M.A.; Johnston, R. A. Dieterlen, B.Litt. Stewart Prize (Hebrew): James Youngson, M.A. Mather Bursary (Law): G. G. Dawson. Medical Bursaries: First year—Liddell (£20), Helen Lillie; Mather (£20), A. J. Will. Second year—Marr (£30), W. J. Escoffery; Watt (£30), A. E. Campbell; Thompson (£22, £20, £18), R. M. Boyd, Ian G. Bisset, John Proctor; Greig (£6), F. F. Brown; Knox, H. T. Findlayson; Milne, Philip W. Stewart; Wight (£25), R. S. Snowie. Catto Bursary in Arts: R. N. Gilchrist, M.A.

CAMBRIDGE UNIVERSITY.—Arnold Gerstenberg Studentship: C. D. Broad, Scholar of Trinity.—John Lucas Walker Studentship: W. M. Scott, M.B., Ch.B., B.Sc. Edin.; C. W. Ponder, M.A., M.D., Emmanuel.—Bhaonagar Medal: Evelyn H. P. Jolly, B.A., St. John's.—Research Studentship in Medical Entomology: Gordon Merriman, Trinity Hall.—Charles Oldham Shakespeare Scholarship: R. C. Brooke, B.A., King's.—Anthony Wilkin Studentship in Ethnology and Archæology: A. R. Brown, M.A., Fellow of Trinity.—John Winbolt Prize in Civil Engineering: E. T. Busk, B.A., King's.—Member's Prize (English Essay): A. K. Gray (Jesus); *proxime accessit* G. H. L. Mallory, B.A., Magdalene; honourable mention, Alexander Ramsay, B.A., Gonville and Caius.

Gonville and Caius.—Drosier Fellowships: Harold Mattingley, B.A., and W. T. Layton, B.A.

St. John's.—Fellowship: D. W. Ward, B.A.—Hutchinson Research Studentship (Natural Science): D. G. Lillie, B.A.

IRELAND, ROYAL UNIVERSITY OF.—Studentships—Classics, Jeremiah M. Murphy, B.A., University College, Dublin, and Pope's Hall, Oxford. Irish, James J. Doyle, B.A., University College, Dublin. History and Political Science, Matthew Connolly, M.A., University College, Dublin. Mathematics, Arthur J. Donnelly, M.A., B.Sc., University College, Dublin; Mary Cotter, B.A., St. Mary's University College, Eccles Street, and School of Irish Learning, Dublin, and Michael Power, M.A., University College, Dublin, were awarded special prizes of £50 each.—Junior Fellowships—Modern Literature, Florence B. Adamson, M.A., Queen's College, Belfast. English and History, Norah L. Scott, M.A., Alexandra College; Maria W. Swertz, M.A., La Sorbonne, Paris, was awarded a special prize of £100.—Nine candidates gained exhibitions of £42 each, and sixteen candidates gained exhibitions of £21 each.

LONDON UNIVERSITY.—Martin White Scholarships (£35 a year for two years): Miss Aileen Marie Clegg, internal student of Bedford College, and Miss Gladys Mary Rhodes, internal student of the London School of Economics and Political Science.

MANCHESTER UNIVERSITY.—Research Fellowships: in Chemistry, J. Holt, junior, M.A., D.Sc., and A. N. Meldrum, D.Sc.; in Metallurgy, Walter Gontermann; in Physics, Hans Geiger, Ph.D., B. Beltwood, Ph.D., and W. Wilson, M.Sc.; in Zoology, N. S. Leigh.

NEWCASTLE, ARMSTRONG COLLEGE.—Johnston Chemical Scholarship (£65 for one year): T. P. S. Vitty, B.Sc.

OXFORD UNIVERSITY.—Eldon Law Scholarship: Alan E. G. Hulton, B.A., Fellow of All Souls, formerly Scholar of New College.—Craven Fellowship: W. R. Halliday, B.A., New College.—H. F. Pelham Studentship: T. E. Peet, B.A.—Senior Kennicott Scholarship: George G. V. Stonehouse, M.A. Exeter.—Naples Biological Scholarship: Julian S. Huxley, B.A., late Scholar of Balliol.

All Souls.—Fellowships: George Marsden, B.A., and Francis Clarke, B.A., both of Balliol College; Maurice L. Gwyer, M.A.

Magdalen. — Fellowship (Theological): John L. Johnston, B.A., formerly Demy of the College.

University.—Stowell Civil Law Fellowship: John C. V. Behan, B.C.L., Hertford.—Edwin Arnold Memorial Scholarship: H. V. Braham, B.A., late Scholar of the College.

WHITWORTH SCHOLARSHIPS AND EXHIBITIONS.—Scholarships (tenable for three years, £125 a year each): A. W. Judge, Plymouth; J. Airey, Shipley; H. S. Rowell, Newcastle-on-Tyne; H. Mawson (Leeds). Exhibitions (tenable for one year, £50 each): F. Duncanson, Sunderland; A. Ryan, Oldham; A. H. Campbell, Portsmouth; J. J. Clark, Liverpool; W. H. Shinkfield, Portsmouth; A. W. Stevenson, Melrose; G. W. E. Hayward, Southsea; J. Morgan, Sheerness; A. F. Grieveson, Chatham; A. E. Gladwyn, Plumstead; W. H. T. Harvey, Swindon; T. H. Webster, Newcastle-on-Tyne; W. J. Davis, Plymouth; O. R. Randall, Birmingham; G. F. Haddock, Sunderland; F. H. Reid, Plymouth; G. B. Kellagher, Gillingham (Kent); T. Norcross, Hollinwood, Oldham; L. P. Parker, Leytonstone; A. Morris, Portsmouth; J. Smith, Crewe; W. Shaw, Woolwich; H. E. Pinch, Sheerness; D. H. Emby, Plumstead; W. Fox, Plumstead; R. H. May, Leytonstone; E. D. Brodie, Swindon; H. J. Goudie, Leith; H. Collins, Gillingham (Kent); C. Williams, Plumstead.

REVIEWS.

MORAL TRAINING AND SCHOOL DISCIPLINE.

Principles and Methods of Moral Training, with special reference to School Discipline. By J. Welton, M.A., and F. G. Blandford, M.A. (3s. 6d. University Tutorial Press.)

This book is a companion or supplement to Prof. Welton's "Principles and Methods of Teaching," and deals more particularly with those functions of the school that are usually embraced under the names "training" and "discipline." It commences with several chapters on the ethical problem that faces the school. The most important of these is probably the second, in which the authors discuss "habits" and "habitudes." The distinction here drawn is no doubt important; a habit is specific, a habitude is generic; but we doubt whether the whole question of the relationship between the two has not been partially shirked, or at least obscured, in the present instance. How does a habit become a habitude? "Habitudes," our authors say, "result from doing, lead to doing, and by doing are always growing, for the forms of doing are infinitely varied." How does this agree with the results detailed in Prof. Bagley's "Educative Process," where it is shown, as a result of experiment, that "neatness" and "accuracy" in one department do not flow over appreciably to other departments, at any rate apart from instruction in the duty and meaning of these qualities? It seems to us that this distinction between "habits" and "habitudes," though valuable terminologically, is practically useless until the transition from habits to habitudes is more fully explained. To urge the reader to "cultivate the habitude of moral thoughtfulness—that is, of consideration and deliberation when such is needed"—is to advocate moral instruction, or its equivalent, but the authors fight somewhat shy of this admission.

Similarly we are told that in games are developed "such habitudes as those of working in co-operation with others, of willing submission to those who in other spheres of school activity may be only equals, or even inferiors, of bearing discomfort uncomplainingly . . . in short, the habitudes of social co-operation, self-control, and physical endurance." The question here again forces itself forward, whether generalized habitudes are actually formed by merely specific modes of activity. One is reminded of the suggestion in Forbush's "Boy Problem," that "with the stories of great leaders and patriots would be associated games which involve team play, leadership, &c.": here the element of elucidation—the element which alone functions in a *generalizing* way—is provided for in the "stories." Our present authors are fully conscious of the ambiguity of the word "habit," and of the need that "habit" should develop (via "habitude") into "purpose"; but throughout their treatment we somewhat miss the explicitness which we should desire in any discussion of the question how a specific series of habits (and habits are extraordinarily specific) becomes a generalized rule of life. And that, after all, is the crucial point in a book which deals with "moral training through school discipline." We have no doubt that the careful reader will discover the link between the two things—"moral training" and "school discipline"—but it is not obvious on a first inspection.

The older type of "school management" book erred in the barren definiteness and summary exactitude of its statements; the newer and vastly improved type seems likely to err in the opposite direction. We should rejoice if each of the present excellent chapters had a summary at its end; we should then probably be able to discover the "missing link" above mentioned, and the reader unfamiliar with ethical discussions would also find his path cleared of obstacles.

The chapters on "Duty," "Virtue," and "Conscience" are well written, and illustrated by many pertinent passages from modern literature.

Probably the most valuable chapters for the teacher are those which are headed "The School Community," "Exercise of Discipline," "Disciplinary Organization of the School," "The Relation between the School and the Home," and "Stimulus and Restraint." Here is heard the voice of the practical teacher and organizer. Though the logical arrangement of the book might have suffered, we should have been glad if these chapters had been, so to speak, fused with the earlier and more theoretical chapters, so that the ethical significance of the school functions

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might have been made still more explicit than at present. The teachers for whom the book is intended are not fond of ethical discussions, however well illustrated; but they are keenly interested in whatever is seen to bear directly on their work. An account is given in Chapter X of the "Stars and Stripes" method of discipline (invented by Mr. B. G. Grenfell), which ought to prove valuable to teachers unacquainted with that system. We congratulate the authors on the production of a volume which, if not very distinctive, is a rational and useful contribution to the subject. F. H. H.

DYNAMICS.

A First Dynamics. By C. S. Jackson, M.A., and W. M. Roberts, M.A. (5s. Dent.)

The applicability of the titles of the present volume and its predecessor on statics has been called in question by some who consider that these text-books pass beyond the limits of what is usually included in a first course in mechanics. The authors, however, prefer to adhere to their original choice on the ground that a more restricted knowledge of the subject than that contemplated by them cannot be conceived of as a possession worthy of the effort necessary to acquire it. Possibly the writers have assigned a rather broad meaning to the titles selected, but, in "A First Dynamics," at any rate, the student starts at the very commencement of his subject. The authors, on principle, presuppose on the part of the reader some knowledge of the special case of dynamics which constitutes the science of statics. Apart from that, they look for little previous mathematical training beyond a study of ordinary algebra and an acquaintance with the elements of trigonometry. The above assumptions leave the writers free to discuss fully the difficulties of dynamics, whilst the attention of the student is enabled to concentrate itself on these alone. The general order of development and the method of treatment adopted in the text-book are very attractive and thoroughly suggestive in character. Experiment and anecdotes culled from the history of the subject furnish an interesting mould in which to cast the theory, and lend life and colour to the investigations by means of which the student acquires a knowledge of principles and a familiarity with working formulæ. At times broader assumptions are made than appear to be advisable, and the reader needs to be always thinking at his best in order to grasp the full meaning of the text. The sequence of the discussion presents features of novelty; arguments, however, with much to recommend them, support the innovations. We find, for example, the investigation of the principles of work and energy immediately following the consideration of speeds and speed accelerations, whilst the idea of mass is not introduced until nearly the middle of the course. In spite of the plea of usage set up by the writers in defence of their primary employment of the term "velocity" to denote mere speed, its adoption is deserving of adverse criticism. Velocity, in its strictly scientific sense, involves the conception of direction. The word "speed" does exist and is universally familiar as specifying velocity-*magnitude;* hence the use in a mathematical or scientific text-book of the term "velocity" apart from the notion of direction is both unwise and unnecessary, and the writers of such treatises can at least avoid supporting a loose employment of words, even though (to quote the argument of the authors) it may be beyond their power to alter the English language.

We must also once more deprecate the disregard of the *sense* of lines where the expressions for the trigonometrical functions are concerned. The correct nomenclature should be adopted invariably, and it does not matter that in a particular connexion the angles involved may, as a general rule, be acute. Otherwise, as soon as the functions of an angle greater than a right angle are required, imperfect modes of expression become worse than useless, and the student has to unlearn what he has been at some pains to learn only a short while before. The book is very fully illustrated with useful — though, in many cases, rather roughly executed—diagrams. It contains also a very large assortment of exercises in order that the individual student may have opportunities for selecting problems possessing special interest for him: it is not the intention of the authors that every reader should attempt all. The criticisms offered above deal with defects which, important as they are, still leave intact the excellence of the work as a whole. The volume is more than likely to take a permanent place amongst standard mathematical and scientific texts.

GENERAL NOTICES.

MATHEMATICS.

Differential and Integral Calculus. By Daniel A. Murray, Ph.D. (7s. 6d. Longmans.)

To some extent the volume is in the nature of a second edition of the author's "Infinitesimal Calculus," the text of which has been very freely adapted and reprinted. The contents, however, have been subjected to considerable rearrangement, and are now given in a form acceptable to students to whom at first it is desirable to present the ideas of the Differential and Integral Calculus otherwise than in intimate connexion. To suit the fresh purpose of the work and the type of student primarily considered in it, additions have been made and modifications of treatment have been introduced. The new material touches more especially on indeterminate forms, on the subject of solid geometry, and on the elementary theory of motion. The subject is very capably handled.

Elementary Algebra. By P. Ross, M.A., B.Sc. (4s. 6d. Longmans.)

The present volume contains the complete work; but Parts I and II are also issued separately, and the former has been already a subject of notice in these columns. Part II commences with the theory of indices, and treats successively the more advanced portions of the algebra usually included in the curriculum of higher-grade and secondary schools. The discussion is based on modern ideas, and is in general thoroughly clear and satisfactory.

MODERN LANGUAGES.

"El Pensamiento Infantil."—Sexta Parte: *El Grafico.* (Madrid: Saturnino Calleja.)

The series is adapted to the intelligence of young folk, though it is expected to be useful to adults as well. The present section consists of "trabajos manuales y lecciones de cosas sobre ciencias, artes y oficios," and is generally intended "dar á los niños nociones muy superficiales de hechos relacionados con el mundo material, esto es con las Ciencias físicas, Agricultura, Metalurgia, Mecánica, Química y práctica de industrias—nociones que pueden servir de base á estudios más profundos." The scope of the work is very wide, but the treatment is quite simple, and there are no fewer than 1,200 illustrations.

Histoire de la Nation et de la Civilisation Françaises. Par Edouard Driault, Professeur agrégé d'Histoire au Lycée de Versailles, et Henri Sée, Professeur d'Histoire à l'Université de Rennes. 1 fr. 50. Paris: Picard (18 & 20 Rue Soufflot.)

"En un mot, nous nous sommes appliqués à tracer un tableau des progrès de la civilisation même de notre pays, de son développement politique, économique et social, vers plus de liberté, plus de bonheur et plus de justice." The sketch is judiciously selective, reasonably full, and very clear; with questions and exercises to each lesson or chapter. The illustrations—maps, scenes, portraits, &c.—are very numerous and effective.

A Modern German Reader. For Middle and Upper Forms. By J. A. Joerg, Head of the Modern Side, and J. B. Joerg, B.A., Master of the Army Class and Senior Modern Language Master, Dulwich College. (1s. 6d. net. Alston Rivers.)

The volume contains fifty passages, mostly prose with occasional pieces in verse, a considerable proportion "describing the political and social institutions and conditions of Modern Germany, setting forth the life and the characteristics of its people, its industries, and its commerce." The matter accordingly is of live interest, and the language involves a wide and varied vocabulary. The volume will be very serviceable for "unseen" readings.

Messrs. Marlborough issue, in their well known "Self-Taught Series," (1) a fourth edition of *L'Anglais sans Maître*, revised and enlarged by M. H. Hébert, and (2) *El Inglés para Cada Cual*, for the instruction of Spaniards in English, by William Chevob, Profesor de idiomas (1s. each, wrapper; 1s. 6d. each, cloth). Both works follow the usual lines of the series, and are well calculated to do good service in their several spheres.

HISTORY.

Notes of Lessons on History. (Vol. I, 3s.; Vol. II, 3s. 6d. Pitman.)

"Notes *for* Lessons" would be a more appropriate title, for the actual guidance offered under the heading "Teaching Hints" is meagre. Each lesson or method-unit is arranged thus: Heads, Analysis of Lesson, and Teaching Hints. "It is not intended that each lesson shall coincide with the 'lesson period,'" but that the teacher shall regard the attainments, &c., of the class, and present the matter in accordance with their requirements. The selection and arrangement of the facts is excellent on the whole, though many of the statements made are misleading if taken alone. John still "signs" Magna Carta. When will text-book writers learn that he did not "sign" the document? The Charter confirmed in 1297 was not the Charter of 1215 (as the text would suggest), but that of 1225—the "Inspeximus" Charter. The "Revolution Society" and the "Constitutional Society" are quoted as having been formed expressly to support the Revolution in France, whereas the former (at any rate) met to commemorate the English

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Revolution of 1688, and the latter, Burke says in his "Reflections" (1790), "is of seven or eight years' standing." The significant fact about the Bastille in 1789 is not that it was "the ancient prison of Paris," but that it symbolized tyranny. The facts are stated forcibly and clearly; but frequently there is insufficient guidance in interpreting them, which, after all, is the main business of history teaching. There are excellent quotations in prose and poetry from our leading authors and exhaustive lists of historical novels bearing on each lesson, and the topics of the lessons are varied and comprehensively treated.

The "Normal" Stuart Period. By J. Beith. (2s. 6d. Normal Press.)

The author "aims at meeting the needs of students who require a brief and clear account of the main facts of English history during the years 1603–1714." He follows traditional lines. No student that reads the book carefully can fail to become thoroughly conversant with the chief questions and personages of the period. The style is serious and the judgments expressed are substantially sound. Lists of questions are appended to each chapter, but there is no index. An excellent work, very suitable for examination purposes.

A First History of England. Part VII: 1820–1901. By C. L. Thomson. (2s. 6d. Horace Marshall.)

This book forms the last of an excellent series for pupils in secondary schools—a series that cannot fail to kindle a love for the subject. The material is capably managed and the leading movements are presented graphically and without bias. "Sources" are largely drawn upon, as in the previous volumes, and effective use is made of them to sustain the interest. In the chapter on Chartism, we suspect exaggeration in some of the details: nine (not twenty) Chartist victims would be nearer the mark in the Newport affair. The difficult matters of foreign policy are subordinated to the "history of the English people." The ministries of the period are set out in tabulated form. The illustrations—portraits of statesmen chiefly—are satisfactory. The style is lucid and agreeable. We cordially recommend the book.

MISCELLANEOUS.

An Editor's Chair: a Record of Experiences and Happenings. By Ernest Foster. (2s. 6d. net. Everett.)

Mr. Foster's modest aim is, "as far as possible, to show the wheels going round in the editorial office of a popular weekly." He bases his descriptions and suggestions upon twenty years' experience in the editorial chair of *Cassell's Saturday Journal* and a dozen concurrent years in charge of *Chums*. By giving prominence to the personal aspects, he secures a special interest. "The curtain is lifted on well known authors who contributed; on regular contributors, occasional contributors, and would-be contributors; there are glimpses of writers distinguished in other spheres, as well as of famous people outside the world of letters; and the human element is to be found too in incidents—many of them noted as they occurred—which illustrate different branches of editorial work." Different aspects of the subject are treated in separate chapters. The style is simple and agreeable; the handling is judiciously reserved; and intending contributors may gain many useful hints as to how to go about their work and how not to go about it. A charmingly instructive and entertaining volume, with the author's portrait as frontispiece.

The Navy League Annual, edited by Alan H. Burgoyne (2s. 6d. net, Murray), appears in its third year, corrected to October 10, 1909, and published appropriately on Trafalgar Day (October 21). The first Part surveys the progress of the British Navy and the state of the rest of the navies of the countries that need be seriously considered, concluding with a statement of comparative naval strength. It is something to learn from the editor "that between the Christmases of 1908 and 1909 the British Navy will be in a position of naval superiority as against foreign nations never before attained." But we must demur to his remark that we owe this position "more to good fortune (that is, the delays in foreign shipbuilding) than to the foresight of the present Government." Neither the present nor any other Government shuts its eyes to what is doing in foreign shipbuilding yards. Part II consists of a number of useful papers by experts upon various aspects of naval policy or of naval development. Part III gives numerous elaborate tables, extremely serviceable for reference. Though we must reserve confidence on occasional points, we heartily commend the volume as a valuable compendium of information on a vital subject. There are many good illustrations.

DIARIES.

Letts's Diaries (Cassell) are as useful as they are varied. By way of specimen we have No. 11, office diary and almanac, strongly bound, 4s.; No. 16, a dainty thing in leather for the corner of the pocket, 1s. net; No. 25, a larger pocket diary, also in leather, 2s. net; No. 26, a pocket diary and almanac in cloth boards, 1s. net.; No. 31, rough diary, 1s. 6d.; No. 32, also a rough diary, with interleaved blotting, 1s. 6d.; and No. 49, a scribbling diary (enlarged edition), with interleaved blotting, 1s. 6d. Most of the diaries contain a great variety of practical information, always serviceable for ready reference. Insurance coupons are attached to each volume.

Pitman's Shorthand and Typewriting Yearbook and Diary (1s.) contains the usual details relative to the two principal subjects. "Perhaps the most striking feature in the present directory is the number of new national societies—several being included for the first time—and their remarkable growth."

CHRISTMAS BOOKS.—II.

Romance of History.

A Northumbrian in Arms, by George Surrey (5s., Henry Frowde and Hodder & Stoughton), opens with a mad frolic and a wrestling bout at Saltersby Fair, in Lincolnshire, in the year 1054, and soon passes to matters of more serious import. Harald Ulfsson, of Olafsdale, feels the vengeance of Sir Robert de Main-de-Fer, lord of a great manor in the neighbourhood of Spalding and one of the chief of the well hated Norman friends of the King, and is outlawed. He goes north with Earl Siward's army against Macbeth. Incidentally there are many deeds of daring and adventures of varied interest. The outlawry is removed, and Harald fights at Senlac. Six illustrations in colour by J. Finnemore.

In the New Forest, by Herbert Strang and John Aston (1s., Henry Frowde and Hodder & Stoughton), is a story of the reign of William the Conqueror. It opens with a vivid description of the Battle of Hastings, and tells of the kidnapping and oppression of Eadric the Englishman by his uncle, a rapacious lord from Normandy. It pictures strongly many of the characteristic features of the time, and is full of movement and energy. Five illustrations.

Kinsman and Namesake, by R. Stead (2s. 6d., Blackie), is a story of the days of Henry IV. Richard le Scrope, of Bolton, is kinsman and namesake of the Archbishop of York, who, with the Earl of Northumberland, heads a plot against the King "for the laws and the good government of England," and Prince John and the Earl of Westmoreland lead the Royal forces north to quell the rebellion. There is abundance of scope for intrigues and conflicts, and the private interests are deftly interwoven with the public events. The interest is briskly maintained. Five illustrations by W. B. Handforth.

The Lost Empire, "a tale of many lands," by Captain Charles Gilson (6s., Henry Frowde and Hodder & Stoughton), sketches the dissipation of a dream of a French empire in the East through a narrative of "the fortunes and misfortunes of Thomas Nunn, and of all the astonishing adventures that befell him from the blockade of Genoa to the siege of Seringapatam." Both Nelson and Bonaparte figure in the scenes; and one notes with interest the author's appreciation of Berthier, "the greatest chief-of-staff that ever lived." Captain Gilson takes care not to contradict history, and limits his invention to supplementary facts that might very well have been true. A brilliant and vigorous story, full of incident, and absorbingly interesting. Eight illustrations in colour by Cyrus Cuneo.

In Days of Danger, by Harold Avery (3s. 6d., Nelson), is a bustling tale of the French invasion threatened by Bonaparte. It pictures vividly the popular feelings of the time: "at that time we were apt to think of our neighbours across the Channel as a dweller in the tropics might regard a species of death-dealing snakes." There is plenty of excitement on sea and on shore; and there is a mystery about a personage that busies himself with inventions of explosives, and a complication over the fate of a blue diamond, and a tangle about a missing will. The story is forcibly told, and will be followed with interest. Four illustrations.

Lads of the Light Division, by Lieutenant-Colonel A. F. Mockler-Ferryman (3s. 6d., Nelson), is a stirring tale of the Peninsular War. Jack Claverhill, of the 43rd, "was of the right stuff," as he had already shown at Eton and showed again at Talavera, in the lines at Torres Vedras, in the forlorn hope at Ciudad Rodrigo, and so forth. His foster-brother, a lad of Spanish blood, also encounters strange adventures, for which, let us hope, he is duly rewarded in the long run. A good deal of the actual history of the period is woven into the story, which is vigorously narrated and full of interest. Four illustrations.

A Hero of Sedan, by Captain F. S. Brereton (6s., Blackie), is a tale of the Franco-Prussian War, depicting vividly that terrible conflict "from the early days on the sunny slopes of the Vosges Mountains to the agonizing climax in Paris." The hero, a medical student, a Guy's man, performs prodigies of valour on the French side at Sedan, and afterwards with the Francs-tireurs: and eventually he enters the besieged city of Paris in a balloon and fights eagerly against the Commune. That was a pretty narrow escape when he was all but hanged for a spy at the instigation of the real spy, who had at an earlier date felt the force of his fists for rascally conduct. There are several companions, too, of different nationalities, whose adventures diversify and support the experiences of the hero. The course of the war is vividly sketched. Eight illustrations by Stanley L. Wood.

The Cruise of the Thetis, by Harry Collingwood (5s., Blackie), is a tale of the last Cuban insurrection, working in a considerable amount of historical fact. Two young fellows, an Englishman and a Cuban, who had been school chums, attempt to run a cargo of ammunition to the island—an attempt involving incidents of a sufficiently exciting character. Then there is the rescue of the Cuban's family from a Spanish convict ship, and the connexion of the "Thetis" with the blowing up of the "Maine." The story goes with great verve throughout, and will be greatly appreciated by youthful readers. Six illustrations by Cyrus Cuneo.

Among new editions of old favourites—all of them as good as new to fresh readers—are several of G. A. Henty's stories (3s. 6d. each, Blackie): *Orange and Green*, a spirited tale of the Boyne and Limerick,

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with eight illustrations by Gordon Browne; *Under Drake's Flag*, a stirring tale of the Spanish Main, with eight illustrations by Gordon Browne; and *By Right of Conquest, or With Cortez in Peru*, an ingenious story of highly romantic interest, with eight illustrations by W. S. Stacey and two maps; also two other stories of Henty's, *The Young Franc-Tireurs* and their adventures in the Franco-Prussian War, with eight illustrations in colour by T. Dugdale, and *The Young Buglers*, a tale of the Peninsular War (3s. 6d. and 2s. 6d., Henry Frowde and Hodder & Stoughton). Further, two of Captain F. S. Brereton's breezy books (3s. 6d. each, Blackie): *One of the Fighting Scouts*, a tale of guerrilla warfare in South Africa during the Boer War, with six illustrations by Stanley L. Wood, and a map of South-eastern Africa; and *The Dragon of Pekin*, a tale of the last Boxer rising in China, with six illustrations by William Rainey, R.I., and a map illustrating the relief of the Pekin Legations.

Messrs. Henry Frowde and Hodder & Stoughton issue a second edition of *Samba*, a Story of the Rubber Slaves of the Congo, by Herbert Strang, with six coloured illustrations by William Rainey, R.I., and two plans (5s.). The aim of the book is "to show, within necessary limitations, what the effect of the white men's rule has been." The keynote is the Congo proverb, "Rubber is death." A most forcible and interesting story.

Romance of Adventure.

Palm Tree Island, by Herbert Strang (6s., Henry Frowde and Hodder & Stoughton), is "the narrative of Harry Brent, showing how he in company with William Bobbin, of Limehouse, was left on an island in the Southern Hemisphere, and the accidents and adventures that sprang therefrom." The story is amply furnished with varied incident—discontent, mutiny, shipwreck, encounters with sea-monsters, wild dogs, and savages, &c.; and it is briskly written. Eight illustrations in colour by Archibald Weir, numerous pen-and-ink sketches by Alan Wright, and a map of Palm Tree Island.

Settlers and Scouts, by Herbert Strang (5s., Henry Frowde and Hodder & Stoughton), is a picturesque and stirring tale of the African Highlands—the north-western parts of British East Africa—picturing some of the conditions under which the pioneers of civilization have had to work. Between native raiders and lions, rhinoceroses, hippopotami, &c., there are lively times. Said Mohammed, "failed B.A. of Calcutta University," cook and poet, is an irrepressible figure, and his "palpitating lay" in the last chapter challenges Kipling. Six illustrations by T. C. Drysdale, and map and plan.

The Voyage of the Sesame, by A. C. Curtis (5s., Henry Frowde and Hodder & Stoughton), was not such a wild-goose chase as the prudent lawyer anticipated when the three Trevelyan boys, left barely provided, proposed to go to Novaya Zemlya and the Kara Sea to inspect the place marked on a scrap of paper found on a dead shipwrecked sailor, "much gold here." The ship has to be built first, and then the adventures come thick and fast. "We have had a grand time in the 'Sesame.' What pals we have been! Depend upon it, the best part of the gold has been the fetching it." There are stirring fights with pirates, floes, walrus, and weather; and incidentally a good deal of information about Arctic conditions. A bright and breezy story. Six illustrations in colour by W. Herbert Holloway, with maps and plans.

The Hidden Nugget, by Alexander Macdonald, F.R.G.S. (3s. 6d., Blackie), is a stirring story of the Australian goldfields. The enormous gold nugget must be found, and the only clue to its whereabouts depends upon the decipherment of a cryptogram which has come into the hands of a couple of boys. The boys start on the quest. There are bush-rangers about, of course; but, after many trials, the boys capture the precious nugget. But how to carry it off in safety? They paint it to look like ironstone, place it on an improvised sled, and drag it through the sandy desert. They are attacked by a body of masked bushrangers. What eventuated must be left to the discovery of the reader. There is no lack of excitement over this nugget. Six illustrations by William Rainey, R.I., and facsimile of the cryptogram.

Through the Heart of Tibet, by Alexander Macdonald (6s., Blackie), is a vigorous record of the progress of a secret expedition to the sacred city of Lhasa in the face of incessant endeavours of Chinese agents to thwart the objects of the mission. But, before the start, there is the mystery of the man with the moonstone—"a large and perfect moonstone of a most wondrous tinge of colour," with a mysterious inscription inside it, and we dare say it has some connexion with the objects of the expedition. Incidentally there is much information about the traditions and customs of the Tibetans, and a fresh explanation of the causes of the recent advance of British troops into Tibet. Eight illustrations by William Rainey, R.I.

The Rival Treasure Hunters, by Robert M. Macdonald (6s., Blackie), is a tale of the debatable frontier of British Guiana, vigorously narrated and coloured by personal experience of the Hinterland. There, in a mountain hollow, inhabited by a strange tribe of Indians, are mines of wonderful blue diamonds, in quest of which are two rival bands of explorers. The materials for description and excitement are abundant, and the characters are boldly drawn. Eight illustrations by Cyrus Cuneo.

Mighty Hunters, by Ashmore Russan (6s., Longmans), professes to furnish "an account of some of the adventures of Richard and Helen Carson in the forests and on the plains of Chiapas in Mexico." The Barranca del Muerta was well named: very few strangers that entered it ever returned. Black tigers (jaguars), alligators, wolves, snakes, wild cats, devil-dogs, vultures, &c.—there is no lack of game nor of adventures in the pursuit of it. A fresh, stirring, and occasionally weird book. Twelve illustrations by Alfred Pearse.

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Harry Escombe, by Harry Collingwood (3s. 6d., Blackie), is the story of "an amazing adventure in Peru"—the romance of a big railway survey. Escombe, a young civil engineer, goes out as assistant to the chief of the survey staff, an overbearing and tyrannical man, hated by the natives under him, and ultimately rewarded very much in accordance with his deserts. Left in sole charge, Escombe proceeds with the survey, and, while fishing one evening in Lake Chinchaycocha, he hooks and brings up a marvellous collar of gold and emeralds, which marks him in Indian eyes as "the reincarnation of him who first wore the sacred jewel, the lord and father of our people, Manco Capac." He is carried off to the City of the Sun, over the mountains. Here, then, is a plentiful source of exciting adventures, told with all the verve of the favourite author. Six illustrations by Victor Prout.

Dick Trawle, Second Mate, by W. Charles Metcalfe (3s. 6d., S.P.C.K.), is a varied and breezy story of maritime and other adventures. "If a man loves a girl, saves girl's father's life, then father's daughter's life, then didn't get father's daughter to save his own life, I should say something was wrong, very wrong, somewhere." We agree with Captain Storm. Illustrations by Harold Piffard.

The Islanders, by Theodora Wilson Wilson (2s. 6d., Blackie), describes the adventurous life of three youngsters of twelve to five, left under the guardianship of their sister, who is of the mature age of twenty-one, on their own island of Arcoombe in Morecambe Bay. A great tidal wave is responsible for a special excitement. The savage conditions of the islanders scandalizes their aunt Eliza of Liverpool, who visits them and does not at first understand them—whence complications. The events are simply developed and narrated. Six illustrations by Gordon Browne, R.I.

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Midly and Ensign; or, The Jungle Station, a tale of the Malay Peninsula, by the late G. Manville Fenn, appears in a new edition, with four illustrations in colour by G. D. Rowlandson (2s. 6d., Henry Frowde and Hodder & Stoughton). The interest is varied and lively, and the tone is excellent.

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The Gateway to Romance (5s., Nelson) is a spacious volume of tales retold by Emily Underdown from "The Earthly Paradise" of William Morris, splendidly illustrated with sixteen coloured plates and many other pictures, and handsomely got up. It is sure to attract great favour among the children.

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The Faery Queen and her Knights (5s., Seeley) is another volume from the charming and indefatigable pen of the Rev. Alfred J. Church, M.A. It consists of stories retold from Spenser, with all the grace, simplicity, and deftness that Mr. Church has so often exhibited in the long list of his delightful books for young readers. Eight illustrations in colour, delicately designed and beautifully produced, and handsome get-up.

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Harding's Luck, by E. Nesbit (6s., Hodder & Stoughton), is one of those stories where the author invests common, even sordid, facts of life with wreaths of fancy. Dickie of Deptford, a poor lame lad, and dreamer, has wonderful experiences, which willebe followed—in spite of some stiff vernacular—with great interest by young readers. Sixteen full-page illustrations by H. R. Millar.

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Locomotives of the World, by the Rev. J. R. Howden, B.D. (5s. net, Henry Frowde and Hodder & Stoughton), is illustrated by sixteen coloured plates, showing as many different types of locomotives. The letterpress describes plainly and very interestingly the various railways, and especially the development of the engine department. A handsome volume in picture cover.

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Britain's Sea Story, edited by E. E. Speight, B.A., F.R.G.S., and R. Morton Nance (5s., Henry Frowde and Hodder & Stoughton), and now in a third edition, may be taken as a companion volume to Mr. Mason's. It tells "the story of British heroism in voyaging and sea-fight from Alfred's time to the Battle of Trafalgar": and the introduction traces the development of the structure of sailing ships from the earliest times. The authors have "thought it well to devote a considerable space to the earlier periods, especially in the introduction, since the teaching of history ensures a greater familiarity with naval progress since the Elizabethan days, by reason of the wealth of original records and critical work." A most interesting and informatory volume. Twenty full-page illustrations.

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The School across the Road, by Desmond Coke (5s., Henry Frowde and Hodder & Stoughton), derives its interest from the keen feud between two neighbouring schools under different types of government, the friendly contests sometimes passing into hostile demonstrations. When the older type takes over the newer type, there naturally arise difficulties of effective amalgamation, which are accentuated by the prepossessions of a weak head master and his hopeless misunderstanding of a stubborn young pupil from across the road. There is also a vigorous brush with a third institution of the place, an Agricultural College. Mr. Coke knows his boys (and masters) thoroughly well, limns their characters in strong lines, and develops the difficult situation with ability. Boys will read the story with great zest. Six illustrations in colour by H. M. Brock.

The Nicest Girl in School, by Angela Brazil (2s. 6d., Blackie), depicts the school experiences of a lass of thirteen, with the troubles of arithmetic and Caesar and examinations, the action and reaction of schoolfellows, and incidental adventures, more or less exciting, out of bounds. It is an agreeable story skilfully worked out. Did Patty Hirst get the extra prize offered "to whichever girl shall be judged by her companions to have been the most kind, the most thoughtful and generous, and to have passed the most unselfish life amongst you during the whole of the school year"? Five illustrations by Arthur A. Dixon.

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For Girls.

The Quest of the Blue Rose, by Winifred M. Letts (5s., Henry Frowde and Hodder & Stoughton), is the story of Sylvia Sherwood, "a fairly competent telegraphist, earning a wage of fifteen shillings a week," an orphan, "sensitive, shy, much given to reading and to long dreams." The blue rose was part of the adornment of a Dresden china plate given to her once by an old godmother, and to her it signified "all the unattainable glorious things that the soul desires, the right to walk among the elect in meadows of asphodel," and so forth. A poetical thread runs through the story: "There's a lot of poetry in a telegram." Six illustrations in colour by James Durden.

Mistress Nanciebel, by Elsie Jeanette Oxenham (5s., Henry Frowde and Hodder & Stoughton), takes us back to the time of the Dutch War and the Plague, but is essentially concerned with some episodes in the life of a bright and courageous girl, whose father refuses to approve of or to take part in the war, and is consequently relegated to a place in Wales. The plague finds its way even there, and Sir John Seymour and his daughter fight it manfully. A simple but strenuous narrative. Six illustrations in colour by James Durden.

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The Conquest of Claudia, also by E. L. Haverfield (3s. 6d., Henry Frowde and Hodder & Stoughton), promises to be a lively affair, for in the first chapter there is the bursting of a bomb. Claudia is a fascinating lady of fifteen, who "lived habitually in a world of stories," by preference historical novels and love stories; when she was not reading a story she was writing one—a rather trying habit for her governess. It is possible, however, for a governess also to have a literary turn and to be surrounded with mysteries of a different kind as well. However, the conquest of Claudia is very naturally and interestingly effected. An attractive story brightly told. Six illustrations in colour by James Durden.

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(*Continued on page* 508.)

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The Marriage of Jabez Alford, by Beechwood (2s., S.P.C.K.), is of a somewhat similar character, though cast in very different circumstances. "Don't matter two pins what her eyes or hair are like so long as her purse is full of gold." But Jabez is backward; which incensed Isaac, and possibly affected his intentions as to the disposal of his wealth by his will. However, we dare say Jabez did get married, and some of the other personages of the tale as well. Illustrations by Adolf Thiède.

The Girl who wouldn't Make Friends, by Elsie Jeanette Oxenham (2s. 6d., Nelson), is a Welsh story. Gwyneth *fach* ("little")—there was a Gwyneth *fawr* ("big")—without relations, was looked after by a kindly old gentleman that died without making any provision for her, leaving his property to another little girl. The family of the heiress go to take possession, and there are difficulties in conciliating Gwyneth *fach*. A secret hiding-place is one of the centres of interest; and the interplay of the young folk is always brisk. Frontispiece.

When Bab was Young, by L. E. Tiddeman (1s. 6d., S.P.C.K.), tells of a little girl of eleven, whose father, to her great grief, has to go away on a long sea voyage for his health, and who goes with her brother to the Devonshire seaside to recuperate after mumps, and meets some adventures; but the story is more reflective than adventurous. Illustrations by Oscar Wilson.

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Susanna and Sue, by Kate Douglas Wiggin (3s. 6d., Hodder & Stoughton), is a quaintly charming story of the sojourn of a mother and her little daughter at a Shaker settlement in Maine. The mother had left her intolerable husband. The situation is described in a very interesting and incisive way. Four illustrations.

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The Twins, also by Cecil Aldin (6s., Henry Frowde and Hodder & Stoughton), is on similar lines, exhibiting a couple of dogs in a great variety of positions, largely humorous and always characteristic. A clever and handsome volume.

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The Old Man's Beard, and other Tales, by G. M. Faulding (4s. 6d. net, Dent), are marvellous yarns introducing children to kings and fairies, Father Christmas and other mysterious old men, the Squidgicum-Squees, and the Dustman. The Teller-of-Tales acquits herself admirably; and there are four colour plates and nearly fifty text illustrations daintily and graphically executed by Walter P. Starmer.

The Little Duke Richard the Fearless, by Charlotte M. Yonge, is reissued in two bindings by Messrs. Henry Frowde and Hodder & Stoughton in "The Children's Bookcase" series (1s. 6d. net and 2s. 6d. net). The children will be happy with either form of the delightful and simple story. The book is very liberally and effectively illustrated in colour by Archibald Webb.

Christabel in France, by Mrs. Albert G. Latham (3s. 6d., Blackie), tells the further adventures of three little folk—Bell, Teddy, and Marybud, of "Christabel"—in entirely new surroundings. They are taken to France, and their experiences, grave and gay, depict French facts and French ways as seen by those romantic little Englanders. A clever and delightful sketch. Four coloured plates and thirty text illustrations by Paul Hardy.

Stories from Grimm, selected and edited for little folk (2s. 6d., Blackie), is a substantial and spaciously printed volume, with plentiful illustrations in colours, and in black and white, by Helen Stratton.

The Swiss Family Robinson, retold for little folk by Edith Roberts, and illustrated by John Hassall, R.I. (1s., Blackie), outlines vividly representative scenes of the famous story. The pictures are most varied and excellent.

The Story of the Frog who would a-wooing go is illustrated in bold lines and in bold colours by Frank Adams (2s., Blackie.) The type is an imitation of a bold, square script, sensibly clear. A great book for youngsters.

Tales and Talks for Nursery Land (2s. 6d., Blackie) is a delightful collection of stories and pictures, the illustrations by John Hassall and other well known artists.

Round the Clock is a picture-book for little folk—rhymes by May Byron, drawings by Elsie H. Stewart (1s. 6d., Blackie). The rhymes recount the occupation of the hours of the day, and the coloured illustrations are prettily designed and effectively produced.

True Stories from History, retold for little folk by Edith Roberts (1s., Blackie) and profusely illustrated in colours, will delight many young readers, and perhaps inculcate some of the virtues. The artist is no doubt privileged; but surely he (or she) might have taken the trouble to approximate the age of Wallace when he fought at Stirling Bridge.

A Boy's Book of Battleships, text by Gordon Stables, C.M., M.D., R.N., pictures by Charles Robinson (2s., Blackie), sketches and illustrates the development of fighting vessels from the earliest times to the latest "Dreadnought." The letterpress is instructive and simple, and the pictures will strike the imagination.

How They went to the Seaside, by S. Rosamond Praeger (2s. 6d., Blackie), is a handsome bookful of coloured pictures of children at play, with brief description of the various scenes on the opposite pages. It is brightly got up, and is sure to be a favourite.

Little French People, by Kate J. Fricero (3s. 6d., Blackie), is also a picture book for little folk, showing their little French neighbours in a variety of characteristic positions, the descriptive letterpress opposite. The artist displays a free hand. The get-up is handsome.

The Daisy—"great-grandmother's book"—consists of "Cautionary Stories in Verse, adapted to the ideas of children from four to eight years old," with illustrations by Ruth A. Hobson (3s. 6d., Blackie). The "cautions" are nicely administered, and the illustrations are appropriate, abundant, and effectively produced.

(*Continued on page 510.*)

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Two in a Tangle, by Alice Massie (1s. 6d., S.P.C.K.), is a spirited story of a sister and a brother (and some other people) and a bicycle expedition, with incidents. Illustrations by Oscar Wilson.

The New Line upon Line is a revised issue of "Line upon Line," edited by J. E. Hodder Williams (1s. 6d net, Henry Frowde and Hodder & Stoughton). The two parts of the original edition have been somewhat condensed and slightly modified in expression; and the present work includes both parts as so treated. The chapters retell the Bible story in simple form, with design "to lead children to understand and to delight in the Scriptures." There are a number of coloured illustrations and a picture cover.

VARIOUS.

Messrs. Henry Frowde and Hodder & Stoughton publish a magnificent edition of *Robinson Crusoe* (7s. 6d. net), embellished with twenty-four colour plates after designs by Noel Pocock. The type is large and clear, and the illustrations strike the imagination. He will be a proud boy that gets a copy of this handsome volume for his library.

The Silver Lattice, edited by Richard Wilson (6s. net, Nelson), is a very handsome book of poetical selections of the first quality, including many copyright pieces The type is large and the margins liberal; the illustrations in colour are excellent and numerous, and the cover is pictured. A splendid gift or prize book for boy or for girl.

Orpheus with his Lute, by W. M. L. Hutchinson (5s., Edward Arnold), consists of "stories of the world's springtime," worthy of the author of "The Golden Porch." She goes back to the Greek mythology, and induces each of the nine Muses to tell Orpheus a story by the Well of Memory in the enchanted glade: after which comes the story of Orpheus and Eurydice. A very charming and imaginative setting of the ancient myths, with eight beautiful illustrations after eminent painters.

Stories of Famous Men and Women, edited by J. Edward Parrott, M.A., LL.D. (4s. net, Nelson), is a most handsome volume, lavishly and beautifully illustrated. It tells of sixteen distinguished persons "who in their day and generation went about doing good, and left to future ages an inspiring example of helpful, earnest, and laborious lives" in various spheres of activity. "There is a lesson in every life here presented, and you will be wise if you lay the lessons to heart." The biographies are well written, interesting, and instructive. An admirable gift book for Christmas or any other season.

Jamaica, by John Henderson (1s. 6d. net, A. & C. Black), is an excellent specimen of the charming and instructive series of "Peeps at Many Lands." It describes in simple language both island and people, so that the reader will acquire a very fair general idea of them—of the geography and appearance of the country, and of the ways of life of the folk, including the work and the play of the children. There are twelve full-page illustrations in colour by A. S. Forrest, which admirably depict typical scenes. The get-up is chaste and agreeable.

The delightful series of "The Red Letter Library" offers a wide choice of modest volumes of excellent literature in most tasteful gets up. Among the more recent additions we have *The Ingoldsby Legend*- and *The Professor at the Breakfast Table* (2s. 6d. net each, Blackie.)

ANNUALS.

Herbert Strang's Annual (3s. 6d. net, or 5s. net cloth; Henry Frowde and Hodder & Stoughton) makes a valiant bid for the favour of young folk both in quality and quantity of matter. The numerous contributors are mostly well accustomed to the class of work, and the numerous artists furnish eight colour plates and countless other illustrations appropriate and effective. The letterpress is most varied and entertaining, many of the articles dealing with popular topics of the day, as well as recounting adventures, escapades, and other doings dear to the heart of the natural youth. The type is bold and agreeable, and the get-up is true blue. If we know anything of boys, this annual will be a great success.

Blackie's Children's Annual (3s. 6d.) consists, as usual, of simple and suitable stories and verses for young folk by a considerable number of writers experienced in this class of literary work, and it is lavishly illustrated in colours and in black and white. It is as varied and entertaining as ever.

The Empire Annual for Boys, edited by A. R. Buckland, M.A. (3s. 6d., Religious Tract Society), is a thick book of stories of various sorts, contributed by many well known writers, and illustrated with eight coloured and sixteen black-and-white pictures. There is a considerable spice of adventure, some personal narratives and experiences of interest, and local colour from most parts of the Empire. The tone is strenuous and healthy. The book should be widely read.

The Empire Annual for Girls, edited by A. R. Buckland, M.A. (3s. 6d., Religious Tract Society), consists of some forty stories (or articles) in great variety, by almost an equal number of writers, many of them experienced. The intention is moral and practical, and the "foreword" is strongly religious. The volume is thoroughly interesting. There are eight coloured plates and sixteen black-and-white illustrations.

Bo-Peep (2s 6d., Cassell) is a perennial "treasury for the little ones," with simple and suitable stories in prose and in verse, and abundance of capital illustrations in colour and otherwise. A delightful volume for young folk.

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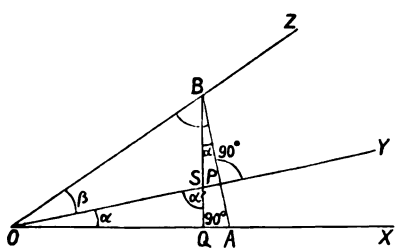
MATHEMATICS.

Trigonometrical Note.

By VENTURA REYES Y PRÓSPER.

Soit $\angle XOY = \alpha$,
$\angle YOZ = \beta$,
$\angle XOZ = \alpha + \beta$.

Prenons sur OZ un point B et menons BQ perpendiculaire à OX et BP perpendiculaire à OY. BQ coupe en S la droite OY, et BP coupe en A la droite OX. Appellons enfin α' l'angle QSO. Nous aurons



$$\sin(\alpha+\beta) = QB/OB = (AB\cos\alpha)/OB,$$

car le triangle BQA est rectangle en Q. Or, nous avons

$$(AB\cos\alpha)/OB = [(BP+PA)/OB]\cos\alpha = [(OB\sin\beta + OA\sin\alpha)/OB]\cos\alpha$$
$$= (OB\sin\beta\cos\alpha + OA\sin\alpha\cos\alpha)/OB$$
$$= \sin\beta\cos\alpha + (OA/OB)\sin\alpha\cos\alpha,$$

car $BP = OB\sin\beta$ et $PA = OA\sin\alpha$.

Or, dans le triangle OBA, nous avons

$$OA/OB = \sin ABO/\sin BAO = \cos\beta/\cos\alpha,$$

car les angles ABO et β, et BAO et α, sont complémentaires. Donc enfin

$$\sin\beta\cos\alpha + (OA/OB)\sin\alpha\cos\alpha = \sin\beta\cos\alpha + (\cos\beta/\cos\alpha)\sin\alpha\cos\alpha$$
$$= \sin\beta\cos\alpha + \cos\beta\sin\alpha.$$

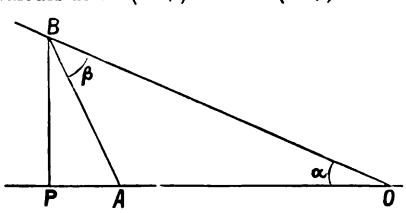
Cette démonstration peut être simplifiée en prenant $OB = 1$.

La formule donnant la valeur de $\cos(\alpha+\beta)$ peut aussi être obtenue de la manière suivante, que je crois nouvelle:

$$\cos(\alpha+\beta) = OQ/OB = (OS\cos\alpha)/OB = [(OP-SP)/OB]\cos\alpha$$
$$= [(OB\cos\beta - SP)/OB]\cos\alpha = \cos\alpha\cos\beta - (SP/OB)\cos\alpha$$
$$= \cos\alpha\cos\beta - [(BP\,\mathrm{tg}\,\alpha)/OB]\cos\alpha$$
$$= \cos\alpha\cos\beta - \{[OB\sin\beta(\sin\alpha/\cos\alpha)]/OB\}\cos\alpha$$
$$= \cos\alpha\cos\beta - \sin\beta\sin\alpha.$$

Je viens de trouver encore une nouvelle démonstration de la formule donnant la valeur de $\sin(\alpha+\beta)$, laquelle me semble avoir de l'intérêt, car la figure est la plus simple que l'on puisse imaginer, et la formule est obtenue par la résolution d'une équation du deuxième degré, donnant comme racines les valeurs de $\sin(\alpha+\beta)$ et de $\sin(\alpha-\beta)$.

Prenons $OB = 1$,
$\angle AOB = \alpha$,
$\angle ABO = \beta$;
alors $\angle PAB = \alpha+\beta = S$.



Nous aurons

$$PB = \sin\alpha,$$
$$\sin PAB = \sin(\alpha+\beta) = \sin S = PB/AB.$$

Donc, $\sin^2 S = PB^2/AB^2$ ou $\sin^2 S = \sin^2\alpha/[1+(AO)^2-2(AO)\cos\alpha]$, car dans le triangle ABO on a

$$(AB)^2 = 1^2 + (OA)^2 - 2(OA)\cos\alpha.$$

Or, dans le même triangle ABO, nous avons

$$OA/OB = OA/1 = \sin\beta/\sin BAO = \sin\beta/\sin(\alpha+\beta) = \sin\beta/\sin S,$$

ainsi l'on aura

$$\sin^2 S = \sin^2\alpha/[1 + (\sin^2\beta/\sin^2 S) - 2(\sin\beta/\sin S)\cos\alpha],$$

d'où en chassant dénominateurs l'on obtient

$$\sin^2 S + \sin^2\beta - 2\sin\beta\sin S\cos\alpha = \sin^2\alpha,$$

ou

$$\sin^2 S - 2\sin S\sin\beta\cos\alpha + \sin^2\beta - \sin^2\alpha = 0,$$

et en résolvant l'équation

$$\sin S = \tfrac{1}{2}[2\sin\beta\cos\alpha \pm \sqrt{(4\sin^2\beta\cos^2\alpha - 4\sin^2\beta + 4\sin^2\alpha)}]$$
$$\sin S = \sin\beta\cos\alpha \pm \sqrt{(\sin^2\beta\cos^2\alpha - \sin^2\beta + \sin^2\alpha)}$$
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$$= \sin\beta\cos\alpha \pm \sqrt{(\sin^2\alpha\cos^2\beta)}$$
$$= \sin\beta\cos\alpha \pm \sin\alpha\cos\beta.$$

[Rest in *Reprint*.]

11654. (Professor DE LONGCHAMPS.)—L'équation

$$Ax^m + mBx^{m-1} + \tfrac{1}{2}[m(m-1)]Ax^{m-2} + \tfrac{1}{6}[m(m-1)(m-2)]Bx^{m-3} + f_{m-4}(x) = 0,$$

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dans laquelle $f_{m-4}(x)$ désigne une fonction entière quelconque, du degré $m-4$, a, au moins, deux racines imaginaires.

Solution by W. E. H. BERWICK.

In order that all the roots of the equation may be real, it is necessary that all the roots of its derivative be real, and hence that all the roots of its second derivative be real, and so on.

The $(m-3)$-th derivative is a numerical multiple of

$$Ax^3+3Bx^2+3Ax+B \quad \text{or of} \quad (A+B)(x+1)^3+(A-B)(x-1)^3.$$

This cubic certainly possesses two imaginary zeros except when $A \pm B = 0$. Thus, except in this case, the given equation has two imaginary roots at least. If $A \pm B = 0$, the $(m-4)$-th derivative is a multiple of $A(x \pm 1)^4 + C$, a quartic which can only possess four real zeros when $C = 0$.

Proceeding in this way, we see that the given equation must have at least two imaginary roots unless the left-hand side is a numerical multiple of $(x+1)^m$ or of $(x-1)^m$.

16737. (Professor SANJÁNA, M.A.)—Prove that numbers of the form X^6+Y^6 can be resolved into three factors when

$X = 5, 121, 3597, 107761, \ldots,$ and $Y = 3, 119, 3595, 107759, \ldots$.

Resolve completely

$N_2 = 121^6+119^6$, $N_3 = 3597^6+3595^6$, and $N_4 = 107761^6+107759^6$.

Solution by Lt.-Col. ALLAN CUNNINGHAM, R.E.

Let $N = X^6+Y^6 = N_{ii}.N_{vi}$, where $N_{ii} = X^2+Y^2$

and $N_{vi} = (X^6+Y^6) \div (X^2+Y^2) = (X^4-X^2Y^2+Y^4)$, a Sextan.

In cases like this, where X, Y are both odd, and $X-Y = 2$ (a constant), it is convenient to change X, Y into x, y by the formulæ $x = \frac{1}{2}(X-Y)$, $y = \frac{1}{2}(X+Y)$, so that $x = 1$ throughout, and the series becomes

$$(x, y) = (1, 4), (1, 120), (1, 3596), (1, 107760), \&c.,$$

and N_{ii}, N_{vi} take the simpler forms

$$N_{ii} = 2(1^2+y^2); \quad N_{vi} = (1^4+14y^2+y^4).$$

The writer has compiled a Table of solutions of the congruence $y^2+1 \equiv 0 \pmod{p}$, complete up to $p \not> 52{,}181$ (this is now in course of publication); this has rendered it possible to factorise the series of N_{ii} completely (into prime factors), as below:

$(x, y) =$	1, 4	1, 120	1, 3596	1, 107760
$N_{ii} =$	2.17;	2.14401;	$2.13.994709$;	48481.239521;

To resolve N_{vi}, assume

$$N_{vi} = P^2-Q^2 = (1+Cy^2)^2-y^2z^2.$$

This requires $(2C-14).1^2+(C^2-1)y^2 = z^2$.

If this Diophantine can be solved (in integers), N_{vi} will be resolvable into two co-factors, $L = P-Q$, $M = P+Q$.

Denote the members of the series of N_{vi} by N_1, N_2, N_3, N_4, &c. Any number (say N_1) of this series may suffice (if the various assumptions are admissible) to determine C by the formula $C = (P-1) \div y^2$. Now $y_1 = 4$ gives $N_1 = (1^4+14.4^2+4^4) = 481 = 241^2-240^2$, whence $P = 241$, $C = 15$, and the Diophantine becomes $16.1^2+224y^2 = z^2$ or $(\frac{1}{4}z)^2-14y^2 = +1$, the successive solutions (y, z) of which are

$$(y, z) = (4, 15), (120, 449), (3596, 13455), (107760, 403201),$$

and these are the values of y required) so that the various assumptions are justified).

The members N_1, N_2, N_3, N_4, ..., of the series of N_{vi} may now be factorised, each into two co-factors (L, M) by the formulæ $P = 1+Cy^2$, $Q = yz$, $L = P-Q$, $M = P+Q$, as below, and then L, M can be further resolved (when < 9 million) by the large Factor-Tables, as the results below:

$x, y =$	1, 4	1, 120	1, 3596	1, 107760
L =	1	13.37	431521;	387504961?
M =	13.37;	431521;	387504961?	13.26767617157?

The large factors (marked ?), being > 9 million, are beyond the powers of the large Factor-Tables: it has been found (by trial) that they contain no divisors < 1,000; their prime divisors (if any) must be of form $p = 12w+1$. Note that these N_{vi} form a "Chain" such that $M_r = L_{r+1}$ for all values of r: this is a general property of all series of N_{vi} formed from successive solutions of 2-ic Diophantines as above (with x constant). This process will be found fully detailed in Chapter IV of the author's paper on "High Sextan Factorisations," now appearing in the *Messenger of Mathematics*. It is not really suited for factorising *given* Sextans (with only x, y known), as it is usually difficult to discover the form of Diophantine suited.

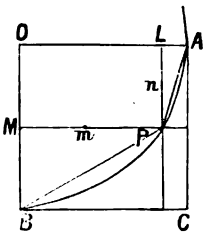
16694. (Professor SANJÁNA, M.A.)—Prove geometrically that

$$\tan^{-1}(\sqrt{m^2+n^2}-n)/m + \tan^{-1}(\sqrt{m^2+n^2}-m)/n = \tfrac{1}{4}\pi.$$

[It is impossible to publish all the numerous solutions sent in.—ED.]

Solutions (I) *by* M. T. NARANIENGAR, M.A.; (II) *by* R. CHARTRES; (III) *by* Prof. K. PRASAD DE, M.A., F. W. REEVES, M.A., *and* A. H. S. GILLSON; (IV) *by* Rev. WILLIAM ANDERSON.

(I) Take a square OACB and describe the quadrant APB. Through P draw PL, PM perpendicular to OA, OB. Denoting these by n, m,



$$\tan \angle MPB = MB/MP = (OB-OM)/MP = (\sqrt{m^2+n^2}-n)/m$$

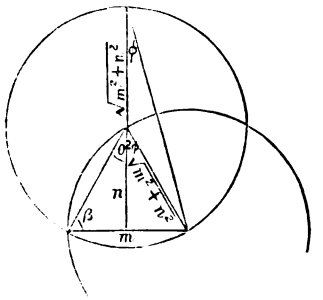
and $\tan \angle LPA = (\sqrt{m^2+n^2}-m)/n$.

Also $\angle APB = \frac{3}{4}\pi$;

therefore $\angle MPB + \angle LPA = \frac{1}{4}\pi$.

Hence $\tan^{-1}(\sqrt{m^2+n^2}-n)/m + \tan^{-1}(\sqrt{m^2+n^2}-m)/n = \frac{1}{4}\pi$.

(II) Evidently



$$\theta = \tan^{-1}(\sqrt{m^2+n^2}-m)/n$$

and $\phi = \tan^{-1}(\sqrt{m^2+n^2}-n)/m$.

Now $\theta+2\phi = \beta$;

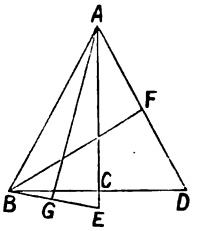
therefore $2\theta+2\phi = \beta+\theta = \frac{1}{2}\pi$.

therefore $\theta+\phi = \frac{1}{4}\pi$.

(III) Construct a right-angled triangle ACB such that its sides AC and BC are of lengths m and n respectively,

Then $AB = \sqrt{m^2+n^2}$.

Produce BC to D, making BD = BA, and AC to E, making AE = AB. Draw BF and AG perpendicular to AD and BE respectively.



Now $CD = \sqrt{m^2+n^2}-n$

and $CE = \sqrt{m^2+n^2}-m$;

therefore $\tan^{-1}(\sqrt{m^2+n^2}-n)/m$

$= \angle CAD = \angle FBD = \frac{1}{2}B$;

and $\tan^{-1}(\sqrt{m^2+n^2}-m)/n$

$= \angle CBE = \angle EAG = \frac{1}{2}A$;

therefore

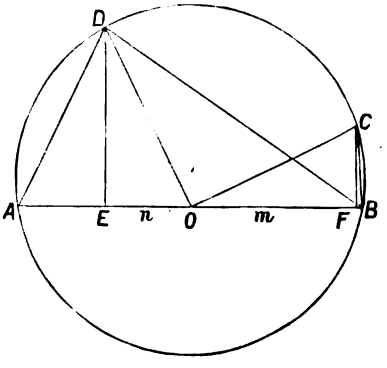
$$\tan^{-1}(\sqrt{m^2+n^2}-n)/m + \tan^{-1}(\sqrt{m^2+n^2}-m)/n = \tfrac{1}{2}(A+B) = \tfrac{1}{4}\pi.$$

(IV) Let $OF = m$,

FC perpendicular to it $= n$,

then $OC = \sqrt{m^2+n^2}$,

$OE = n$, $ED = m$.



$\tan^{-1}(\sqrt{m^2+n^2}-n)/m$

$+ \tan^{-1}(\sqrt{m^2+n^2}-m)/n$

$= ADE + BCF$

$= ABD + BAC$

$= \frac{1}{2}(AOD + BOC)$

$= \frac{1}{4}\pi$,

since DOC is right.

Mr. GILLSON remarks that:—

Geometrically this property may be stated as follows: ABC is an isosceles triangle having AB = AC; and from B, BD is drawn perpendicular to the side AC, and then produced to E, so that BE = AB. Show that twice the sum of the angles EAD, CBD is a right angle.

16683. (Professor NEUBERG.)—Éliminer les constantes a, b, c, m, n, p de l'équation $y = ae^{mx}+be^{nx}+ce^{px}$ en formant les dérivées y', y'', ...

Solutions (I) *by* A. M. NESBITT, M.A., C. M. ROSS, B.A., *and* KRISHNA PRASAD DE, M.A.; (II) *by* T. W. CHAUNDY; (III) *by* EDITH J. D. MORRISON, M.A.

(I) We readily find

$$\begin{vmatrix} y & 1 & 1 & 1 \\ y' & m & n & p \\ y'' & m^2 & n^2 & p^2 \\ y''' & m^3 & n^3 & p^3 \end{vmatrix} = 0,$$

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and on removing the factors $\Pi(n-p)$, we get

$$fy - gy' + hy'' - y''' = 0,$$

where m, n, p are the roots of $\theta^3 - h\theta^2 + g\theta - f = 0$. Thus finally

$$\begin{vmatrix} y & y' & y'' & y''' \\ y' & y'' & y''' & y^{iv} \\ y'' & y''' & y^{iv} & y^{v} \\ y''' & y^{iv} & y^{v} & y^{vi} \end{vmatrix} = 0.$$

(II) We know that

$(d/dx-m)(d/dx-n)(d/dx-p)$ annihilates y,

i.e., $(d/dx)^3 + \alpha(d/dx)^2 + \beta(d/dx) + \gamma$,, y,

where $\alpha = -(m+n+p) : \beta = np+pm+mn : \gamma = -mnp$,

so that $y_3 + \alpha y_2 + \beta y_1 + \gamma y = 0$,

differentiating $y_4 + \alpha y_3 + \beta y_2 + \gamma y_1 = 0$,

$y_5 + \alpha y_4 + \ldots\ldots\ldots = 0$,

$y_6 + \alpha y_5 + \ldots\ldots\ldots = 0$,

so that, eliminating α, β, γ, *i.e.*, m, n, p,

$$\begin{vmatrix} y_3 & y_2 & y_1 & y \\ y_4 & y_3 & y_2 & y_1 \\ y_5 & y_4 & y_3 & y_2 \\ y_6 & y_5 & y_4 & y_3 \end{vmatrix} = 0,$$

is the eliminant, being of the right (the sixth) degree.

(III) Form the first six derivatives $y', y'', \ldots$. Eliminate a, b, c between the original and the first three derived equations; the first, second, third, and fourth; the second, third, fourth, and fifth; the third, fourth, fifth, and sixth; and we get the four equations

$$\begin{vmatrix} 1 & 1 & 1 & y \\ m & n & p & y' \\ m^2 & n^2 & p^2 & y'' \\ m^3 & n^3 & p^3 & y''' \end{vmatrix} = 0, \qquad mnp \begin{vmatrix} 1 & 1 & 1 & y' \\ m & n & p & y'' \\ m^2 & n^2 & p^2 & y''' \\ m^3 & n^3 & p^3 & y^{iv} \end{vmatrix} = 0,$$

$$m^2n^2p \begin{vmatrix} 1 & 1 & 1 & y'' \\ m & n & p & y''' \\ m^2 & n^2 & p^2 & y^{iv} \\ m^3 & n^3 & p^3 & y^{v} \end{vmatrix} = 0, \qquad m^3n^3p^3 \begin{vmatrix} 1 & 1 & 1 & y''' \\ m & n & p & y^{iv} \\ m^2 & n^2 & p^2 & y^{v} \\ m^3 & n^3 & p^3 & y^{vi} \end{vmatrix} = 0.$$

Hence, eliminating m, n, p, we get

$$\begin{vmatrix} y & y' & y'' & y''' \\ y' & y'' & y''' & y^{iv} \\ y'' & y''' & y^{iv} & y^{v} \\ y''' & y^{iv} & y^{v} & y^{vi} \end{vmatrix} = 0.$$

16748. (Professor E. HERNÁNDEZ.)—Dans tout triangle ABC, on a

(1) $r(1/r_ar_b + 1/r_br_c + 1/r_cr_a) = 4(r_a+r_b+r_c)/(a+b+c)^2$,

(2) $p^2r = r_ar_br_c$,

(3) $(ab+bc+ca)/rr_ar_br_c = 1/r^2 + 1/r_ar_b + 1/r_br_c + 1/r_cr_a$,

r étant le rayon du cercle inscrit, et r_a le rayon du cercle ex-inscrit qui touche directement le côté a, et de même pour r_b et r_c.

Solution by F. G. W. BROWN, B.Sc., L.C.P., *and others.*

If Δ denotes the area of the triangle, then, from well known formulæ, we have (i) $\Delta^2 = rr_ar_br_c = \frac{1}{4}(a+b+c)^2r^2$,

(ii) $1/r = 1/r_a + 1/r_b + 1/r^c$,

and (iii) $rr_a + rr_b + rr_c + r_ar_b + r_ar_c + r_br_c = ab + bc + ca$.

Hence

(1) $r(1/r_ar_b + 1/r_br_c + 1/r_cr_a) = r(r_a+r_b+r_c)/r_ar_br_c = r^2(r_a+r_b+r_c)/\Delta^2$
$= 4(r_a+r_b+r_c)/(a+b+c)^2$, from (i).

(2) p (although not defined) is obviously the semi-perimeter; therefore
$p^2r = \frac{1}{4}(a+b+c)^2 r = \Delta^2/r = r_ar_br_c$, from (i).

(3) $(ab+bc+ca)/rr_ar_br_c = (rr_a + rr_b + rr_c + r_ar_b + r_ar_c + r_br_c)/rr_ar_br_c$
[from (iii)]
$= 1/r_ar_b + 1/r_br_c + 1/r_cr_a + 1/r(1/r_a + 1/r_b + 1/r_c)$
$= 1/r_ar_b + 1/r_br_c + 1/r_cr_a + 1/r^2$, from (ii).

16613. (H. L. TRACHTENBERG, B.A.)—The angular points of a triangle, the foci of the maximum inscribed ellipse, and the symmedian point lie on a conic.

Solution by S. NARAYANAN, B.A., L.T.

Since the centroid is the centre of the maximum ellipse, it is evident that the isogonal transformation of the major axis of that ellipse gives a circumconic of the triangle, which passes through the symmedian point and the foci of that ellipse. Hence the theorem.

16657. (Professor V. RAMASWAMI AIYAR, M.A.)—P and Q are any pair of isogonal conjugates with respect to a triangle ABC. If AQ cut the circum-circle in O, and OP cut BC in R, show that QR is parallel to AP.

Solutions (I) *by* C. E. MCVICKER, M.A.; (II) *by* M. T. NARANIENGAR, M.A.

(I) Let AP meet the circum-circle at D; BC at S, and AQ meet BC at U.

Suppose PQ to vary on the lines AP, AQ, then obviously Q, R describe homographic ranges.

When Q is at U, R is also at U, since P is at A; hence QR passes through a fixed point.

When Q is at A, R is at S, and Q, R both lie at infinity when P is at D; thus QR meets SA at infinity. [Rest in *Reprint*.]

QUESTIONS FOR SOLUTION.

16769. (A. H. S. GILLSON.)—Two particles P and Q, of equal mass, connected by a light inextensible thread, are moving in a smooth parabolic tube, under the action of a force to the focus; the force attracting according to the Law of Nature. When the particles are at equal distances from the focus, the common velocity is the same as it would have been if only one particle were present. Show that the velocity at any instant is given by $V^2 = \mu(1/r + 1/r')$, where r and r' are the distances of the particles from the focus.

16770. (Professor SANJÁNA, M.A.)—Prove that the sum of the series $\tan^{-1}\frac{x-\cos\pi/2m}{\sin\pi/2m} - \tan^{-1}\frac{x-\cos 3\pi/2m}{\sin 3\pi/2m} + \tan^{-1}\frac{x-\cos 5\pi/2m}{\sin 5\pi/2m} \ldots$
$- \ldots + (-1)^{(m-1)}\tan^{-1}\frac{x-\cos(2m-1)\pi/2m}{\sin(2m-1)\pi/2m}$
is $\tan^{-1}x^m + C$, where C is independent of x and m is an integer.

16771. (*Communicated by* C. M. Ross, B.A.)—Show that

$$\begin{vmatrix} 1 & 1 & 0 & 0 & \ldots\ldots & 0 & 0 \\ 1! & & & & & & \\ \frac{1}{2!} & \frac{1}{1!} & 1 & 0 & \ldots\ldots & 0 & 0 \\ \frac{1}{3!} & \frac{1}{2!} & \frac{1}{1!} & 1 & \ldots\ldots & 0 & 0 \\ \ldots & \ldots & \ldots & \ldots & \ldots\ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots\ldots & \ldots & \ldots \\ \frac{1}{(n-1)!} & \frac{1}{(n-2)!} & \frac{1}{(n-3)!} & \frac{1}{(n-4)!} & \ldots\ldots & \frac{1}{1!} & 1 \\ \frac{1}{n!} & \frac{1}{(n-1)!} & \frac{1}{(n-2)!} & \frac{1}{(n-3)!} & \ldots\ldots & \frac{1}{2!} & \frac{1}{1!} \end{vmatrix} = \frac{1}{n!}.$$

[N.B.—This question was proposed in the Mathematical Tripos, 1909, Part I, Old Regulations.]

16772. (Professor SANJÁNA, M.A.)—Let N be a rational number (greater than unity) such that $N^{\frac{1}{2}}$, when reduced to a continued fraction, gives $a + \frac{1}{b+}\frac{1}{2a+}\frac{1}{b+}\frac{1}{2a+}\ldots$, *ad inf.*,

and let successive convergents to the fraction be denoted by $c_1, c_2, c_3, \ldots$ Prove that

$$c_{2m} = \tfrac{1}{2}\{N/c_m + c_m\} \quad \text{and} \quad c_{l+m} = \{N/c_l + c_m\} \div \{c_m/c_l + 1\},$$

where l and m are any integers.

16773. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Resolve algebraically into two co-factors each of the numbers $N = (tu)^4 + 3(t^2 \mp u^2)^4$.

Ex.—Taking $t = 100$, $u = 1$. Resolve both N into prime factors if possible.

16774. (D. EDWARDES.)—If S, T denote the substitutions

$$x' = (ax+b)/(cx+d) \quad \text{and} \quad x' = (\gamma x + \delta)/(cx+d)$$

respectively, find (1) the transform of S by T, and (2) the condition that S should be of finite order.

16775. (M. V. ARUNACHALAN, M.A.)—Prove that

$$\tfrac{1}{3}P_1 - \tfrac{1}{5}P_3 + \tfrac{1}{7}P_5 - \ldots + (-1)^{n+1}[1/(2n+1)]P_{2n-1} \ldots = 3\tfrac{1}{16}\pi^3,$$

where $P_{2r-1} = \frac{1}{2}R(1) + \frac{1}{4}R(3) + \frac{1}{6}R(5) + \ldots + \frac{1}{2r}R(2r-1)$

and $R(2p-1) = 1 + \frac{1}{3} + \frac{1}{5} + \ldots + \frac{1}{2p-1}$.

16776. (R. F. DAVIS, M.A.)—Prove that the Simple Interest on £N for t days at five per cent. per annum is $£137Nt/10^6$. [*E.g.*, the interest on £2000 for six days is £1. 12*s.* 10*d.*]

16777. (Professor NEUBERG.)—Étant donné un tétraèdre ABCD, on mène par un même point M des plans parallèles aux faces; soient t_a, t_b, t_c, t_d les aires des triangles suivant lesquels ces plans coupent les angles trièdres A, B, C, D. Trouver (1°) le lieu des points tels que la

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somme $t_a^2 + t_b^2 + t_c^2 + t_d^2$ ait une valeur donnée ; (2)° le point qui rend cette somme minimum ; (3°) les points pour lesquels $t_a = t_b = t_c = t_d$.

16778. (C. E. YOUNGMAN, M.A.)—If three parallels touch a cardioide at P, Q, R, then the tangents *from* P, Q, R will meet at a point T lying on the circle inscribed in the space between the curve and its double tangent.

16779. (A. M. NESBTT, M.A.)—Two parabolas have contact of the second order at P, their axes being at right angles. A, A′ being their vertices, prove (1) that the rectangle under the abscissa and ordinate of P is the same whichever be the parabola to whose (ordinary) axes they refer; (2) that, if the A parabola be fixed and its latus rectum be $4a$, the locus of A′ will be $y^2 = 3ax$; (3) that the polar of A′ with respect to the A parabola envelopes $3y^2 = 32ax$; (4) that the locus of the intersection of the polars of A and A′, each with respect to the other parabola, is $5y^2 = 48ax$.

16780. (Professor E. HERNÁNDEZ.)—On donne un foyer F, un poin. A et les longueurs $2a$ et $2b$ des axes, et on demande de trouver les tan gentes communes aux éllipses déterminées par ces données, ainsi que leurs points de contact.

16781. (S. NARAYANAN, B.A., L.T.)—ABC is a triangle whose medial triangle is DEF. I is the in-centre or an ex-centre of DEF. P is the corresponding Feuerbach's point of ABC. A conic is circumscribed to DEF such that the normals to it at D, E, F meet at I. Show that IP is the *fourth* normal of the conic.

16782. (SONTI V. RAMAMURTY, B.A.)—The condition that an infinite number of triangles can be inscribed in a circle of radius R and in-centre S so as to circumscribe a given ellipse of foci F, F′ and minor axis b, is $(R^2 - SF^2)(R^2 - SF'^2) = 4R^2b^2$.

16783. (Professor NANSON.)—If a, a' ; b, b' ; c, c' are pairs of opposite sides of a four point , prove that

$$aa' : bb' : cc' = \sin\lambda : \sin\mu : \sin\nu,$$

$$aa' + bb'\cos\nu + cc'\cos\mu = 0,$$

$$a^2a'^2 = b^2b'^2 + c^2c'^2 + 2bb'cc'\cos\lambda,$$

where λ is the sum of the angles bc, $b'c'$, or, what is equivalent, the sum of the angles bc', $b'c$.

16784. (R. C. ARCHIBALD, M.A., Ph.D.)—Given a circle C, a line of given length z, and a line l of unlimited length, draw from any point of C a line meeting the circumference again in Q, and l in R, such that $QR = z$.

16785. (H. J. RAYMOND.)—OA, OB are two given radii of a circle, centre O, and C is a fixed point between O and A, on OA. From O and C draw parallel straight lines OE, CD to meet the circumference of the circle in E and D respectively, such that, if O, D be joined, the magnitudes of the angles DOE and EOB shall be in a given ratio.

16786. (W. L. MARR, M.A., B.Sc. Suggested by Qnestion 16563.)—Given a circle and two points A and B, find geometrically points P and Q on the circumference of the circle, so that AP/BP is a maximum and AQ/QB a minimum.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

12392. (R. KNOWLES, B.A.)—In any triangle, prove that

$$bc = (s-c)^2 + 2(s-b)(s-c) + r_b^2 - 2(2R\cos C - r)r_b.$$

12634. (J. J. WALKER, F.R.S.)—Show that the anharmonic polars of three collinear points of inflexion on a plane cubic meet in a point.

12638. (Professor SYLVESTER.)—If a plane moves with the same two of its points always on the circumference of two circles in a fixed plane, prove that no other point in the moving plane can describe a circle except in the case when the distance between the centres of the two circles, their radii, and the distance between the two points consist of two pairs of equal quantities.

12642. (Professor H. L. ORCHARD, M.A., B.Sc.)—In the cubic equation $ax^3 + bx^2 + cx + d = 0$, a and b being known, determine c and d, in order that the equation may be soluble as a quadratic.

12658. (Rev. T. P. KIRKMAN, M.A., F.R.S.)—Show how to find readily any one of the k-partitions ($_kPN$) of N, when merely the product of its k parts is given, the parts being integers > 0, either all different, or any repeated parts. N and k are any positive numbers.

12670. (Professor HUDSON, M.A.)—A cube is placed on a rough inclined plane with four of its edges horizontal. A sphere is placed loosely on the plane above the cube, resting against it. The coefficients of friction between the different bodies being equal, find how, and for what inclination of the plane, equilibrium will be broken.

NOTICE TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Road, West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, November 11th, 1909 (Annual General Meeting).—Sir W. D. Niven, President, in the chair.

Mr. W. P. Milne was admitted into the Society.

The Council and officers for the ensuing Session were elected, as follows:—President, Sir W. D. Niven; Vice-Presidents, Mr. A. Berry, Prof. W. Burnside, Major P. A. MacMahon; Treasurer, Sir J. Larmor; Secretaries, Prof. A. E. H. Love, Mr. J. H. Grace; other members of the Council, Dr. H. F. Baker, Mr. G. T. Bennett, Dr. T. J. I'A. Bromwich, Mr. E. Cunningham, Mr. A. L. Dixon, Dr. L. N. G. Filon, Dr. E. W. Hobson, Mr. H. W. Richmond, Mr. A. E. Western.

The following papers were communicated:—

(1) "The Ordinal Relations of the Terms of a Convergent Sequence," (2) "The Application to Dirichlet's Series of Borel's Exponential Method of Summation," (3) "Theorems relating to the Summability and Convergence of Slowly Oscillating Series": Mr. G. H. Hardy.

"Notes on Synthetic Geometry": Prof. W. Esson.

"Kummer's Quartic Surface as a Wave Surface": Mr. H. Bateman.

"The Green's Function in a Wedge and other Problems in the Conduction of Heat": Prof. H. S. Carslaw.

"The Envelope of a Line cut Harmonically by Two Conics": Mr. J. L. S. Hatton.

"On a Case of q-Hypergeometric Series": Rev. F. H. Jackson.

Informal communications were made as follows:—

"On the Extension of Abel's Theorem concerning the Sums of Power Series at Points on the Circle of Convergence to Cases in which the Series are Oscillatory": Dr. E. W. Hobson.

"On the Effect of the Earth's Rotation upon the Observed Values of the Lunar Disturbance of Gravity": Prof. A. E. H. Love.

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